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The Farmer's Digest

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The **Farmers Digest**

Volume 17 December 1953 Number 6

DAIRY MUDDLE

Read this comprehensive article from a businessman's newspaper. It gives you the kind of facts you don't ordinarily see . . .

Condensed from The Wall Street Journal

John S. Cooper

THE dairy industry is now more than halfway through what Agriculture Secretary Benson called its "year of transition," during which its leaders were given the assignment of figuring out a way of ending dependency on high price supports and Government stockpiling of butter, cheese and dried milk. How are they doing?

In Minnesota recently, top butter-making state, the House Agriculture Committee heard more than 60 farmers and farm chieftains testify. A sizable majority favored keeping price props right up at the present 90% of parity—a level that is far above what existing law requires and is driving more and more housewives to margarine.

The Minnesota Farmers Union went farther—called for still higher price supports. And farmer Richard Herbitz of St. James came out with a ringing request that the committee use its influence toward kicking Mr. Benson out of his job.

Note also this: At its convention the Minnesota Creamery Operators and Managers Association went on record as demanding that any future price

Reprinted by permission from The Wall Street Journal, Chicago 90, Illinois

support programs should include the lower grades of butter, not just the best grades now covered.

Plenty of Proposals

That's about the size of it. The dairy industry has failed to get together on any clear-cut program for getting back on its own feet. It has come up, it is true, with a bewildering variety of proposed "solutions" for the glut of its products. Most of these would involve heavy Government purchases, subsidies, price - rigging—and such devices as a billion-dollar Federal fund for what's called a "self-help" program.

Test the temper of the industry elsewhere and you find it about the same as in Minnesota. For example, the Wisconsin Creameries Association, in the third greatest butter state, has passed overwhelmingly a resolution favoring retention of price props at present levels for all dairy products.

Secretary Benson coined the "year of transition" phrase back in March. At that time he could have let dairy price supports drop to 75% of parity, under the law, but he agreed instead to prop dairy products at 90%. He said then: "We made this decision because the great dairy industry said to us 'We can solve our marketing problems, but we need time to get our program into operation.'"

As far as surpluses go, the transition has been from bad to worse. On September 30, the end of the first half of the dairy year, Mr. Benson's oozy dairy stockpile had grown to 278 million pounds of butter, 215 million pounds of cheese and 417 million pounds of dried milk. At the end of March, the Federal cupboard held 120 million pounds of butter, 75 million pounds of cheese and 170 million pounds of dried milk.

There's not much chance that the surpluses will grow smaller by next March 31, when Mr. Benson must make his price-support decision all over again. This is so despite the recent sale of a smidgen of Federal butter back to the trade. People aren't eating much more butter or cheese than they did last year, and producers have kept on making them at a near-record rate with the iron-bound assurance that Uncle Sam would take all the overflow. And the Government says farmers are adding still more cows to their dairy herds, so the production potential is even larger.

To be sure, dairy people's reaction to the surplus problem is not all unimaginative. A committee of 100 industry lead-

ers appointed by Secretary Benson came up in the summer with a number of surplus-whittling ideas. They're now under consideration at the Agriculture Department. The proposals, according to the secretary's top dairy aide, "in some respects were encouraging and in other respects were a little disappointing."

But a more cynical observer of the proceedings gave a less genteel summary: "Bob Hope, Bob Crosby and the Brannan Plan." He referred to plans, now in effect, for industry sponsorship of Mr. Hope on the radio and Mr. Crosby on TV.

The top proposal, which has the backing of the American Butter Institute, the National Cheese Institute and several other prominent dairy associations, is a "price rollback" plan. Under this plan, the Government would sell butter and cheese back to producers at prices lower than it paid for them, permitting lower prices for consumers and assuring losses to the U.S. Treasury. The rollback would amount to 10 to 12 cents a pound for butter, which is supported at about 65 cents a pound, and about 6 cents a pound for cheese, which carries a 37-cent support price.

"This is not a subsidy program. It is a purchase and sale plan. Better a 10 or 15-cent-per-pound loss to stabilize present chaotic marketing conditions than to give the whole 65 cents away," contends L. P. McCoun, of Harding Cream Co., Omaha, who is president of the American Butter Institute.

However, a paid staff official of another big dairy association comments: "My association voted for this solution, but a good many of us know that it doesn't stand a chance. It's just a veiled version of the old Brannan Plan under which the Government pays a subsidy to keep support prices high and prices to consumers low."

Counsel for the National Creameries Association advised that body that the plan is of "doubtful legality" so the association adopted as an alternative a so-called "bargain counter" plan of disposing of the Government's huge stock. Under this plan, consumers would get one free (or very low-priced) pound of butter or cheese for every pound they bought from their grocer at regular prices.

"This is a program that every advertising man dreams of putting across," says Mr. McCoun, of the butter institute. "Unfortunately, however, it is practically impossible to put into effect equitably on a national

basis. It would further disrupt the normal channels of trade and it would scatter rose petals in the path of the unscrupulous black market operator."

"Both plans would involve questions of legislative authority as well as rather difficult problems of administration," E. M. Norton, director of the dairy branch of the Department of Agriculture, said before he resigned a few days ago.

Charles W. Holman, secretary of the National Milk Producers' Federation, which claims to represent 416,000 dairy farmers in 46 states, doesn't think much of either plan. His idea is for more "self-help" on the part of the dairy farmers themselves. Through special levies on their own production they would buy up dairy products in times of oversupply and sell them later. However, this would require Government funds for capital at the start which would be paid back later by the farmers. The amount needed to start the program: About a billion dollars.

The American Dairy Association, which administers dairy advertising and promotion with funds collected by assessments from farmers themselves, thinks the answer is in bigger promotions. Dairymen in 15 states have voted to double their self-imposed tax to a half-cent a hundred pounds on milk or two cents per 100 pounds on cream and to make the collections for 12 months each year instead of two months. This is expected to increase dairy promotion funds from about $2 million this year to $4 million to $6 million next year, with an eventual annual goal of $10 million to $12 million.

Hope and Crosby

With the funds this year the A.D.A. is sponsoring Bob Hope on 39 weekly half-hour radio shows on Friday nights and Bob Crosby on 67 bi-weekly 15 minutes TV shows in the afternoon. Other A.D.A. promotions include recipe booklets and toothsome ads in magazines like McCall's, Better Homes & Gardens and the Ladies Home Journal.

"We are spending twice as much this winter as we spent for the last 14 months," says Lester Will, general manager of the A.D.A.

But many food people doubt that even this selling push can do much to boost buying of butter, as long as rival margarine is priced at only about one-third as much. And measured in terms of cost, butter is easily the biggest item in the dairy surplus pile.

Butter consumption this year may increase to 8.7 pounds per

capita, according to the Government, from a record low of 8.6 pounds in 1952, possibly because of some of the promotion. However, when the A.D.A. was founded 14 years ago, national per-capita consumption was 16.8 pounds. The plunge from that height has come despite the employment of Paul Whiteman, David Lawrence and other A.D.A. radio and TV endeavors.

Busy Rivals

Meanwhile the competition is busy. Margarine makers are advertising heavily. In 1952, for the first time on record, margarine manufacture surpassed creamery butter production. This year margarine output has risen again.

If dairy promotion is being stepped up on an industry-wide basis, what are individual companies doing to increase their brand sales?

"Not much. Salesmanship by manufacturers to sell butter to retailers is dead on its feet," claims Chuck Mittlestadt, of Campbell-Mithun, Inc., the advertising agency the A.D.A. has hired to help plug dairy products.

Mr. Mittlestadt took a tape recorder into 35 Midwest supermarkets and interviewed store managers. He found the number of brands of margarine on shelves outnumbered butter by as much as three to one. Butter was pushed back into the back corner of the dairy display case and in many cases the butter salesman hadn't been around to see the retailer for months. In the use of promotional gimmicks like premiums, contests, coupon offers and samples, the advertising research crew also found butter lagging far behind its rival.

There were a few exceptions, of course. Land O' Lakes, the big cooperative creamery chain, is reported to have increased its butter sales about 10% this year. But generally, says Mr. Middleston, "there is not much brand salesmanship either to retailers or to consumers."

Francis P. Willits, Jr., of the Borden Co., recently offered this appraisal: "The cold-blooded fact is that in terms of today's effective demand we have too much milk. Moreover, we are running the grave danger, by reason of the present price support philosophy, of encouraging dairy farmers to continue to produce too much milk.

"Although it is probably true that more people would eat more butter at a lower price, we must also face the fact that margarine has established itself as part of the American diet just as processed cheese did in the early 30's."

HOW TO

Market 10 Good Hogs Per Sow

Claire Wemer uses some "right" methods you can copy . . .

Condensed from Successful Farming

Wayne E. Swegle

•

IN 1945, as a Master Swine Producer, Claire Wemer of Rose Hill, Iowa, raised 9.8 pigs per sow. And his litter size has increased since then—from last spring's pig crop he sold 248 hogs from 24 sows, *more than 10 per sow.*

And the time- and labor-saving ideas in his hog-raising operation are just as exciting—without being very expensive. He has a big water wagon for hauling refills to self-watering tanks. Tank heaters, big self-feeders, movable houses and sunshades, and temporary fencing round out equipment needed for easy winter- or summer-hog handling. Hogs are kept on pasture or cornstalks the year round, except at farrowing time when he uses the central farrowing house.

What does Claire do to get such good averages that other farmers don't? For one thing, "he does everything right," as Mahaska County Extension Director Eldon Hans puts it. Even if the rush of farm work means long night hours scrubbing the farrowing pens, no detail is left undone. Here's Claire's successful hog-raising system in detail—you can use it, too:

He picks the best gilts from fall litters at four months of age for breeding—separating 40 from the fattening lot if he plans to have 30 farrow. Only fast growers with lots of "dinner plates" are kept—and even then they're culled later if they don't suit Claire.

Litters of eight or less are earmarked—and no breeding gilts are saved from these.

Reprinted by permission from Successful Farming, Des Moines, Iowa

The growing gilts on pasture or cornstalks take little time, thanks to the tank self-waterers and a self-fed ration. The ration consists of 4 parts of oats, 4 parts of corn, and 1 part of a protein mixture of linseed meal, soybean meal, and tankage—along with salt and mineral.

Breeding time fits Claire's system, too. The central farrowing house will handle 10 to 12 litters nicely. So he puts 12 gilts or sows at a time in with the boar. Then he adds another 12 every three or four weeks. That way he just keeps the farrowing house full when pigs come—and the boar catches any sows missed the previous heat period.

After the gilts or sows are bred, they're left on cornstalks or pasture, winter or summer. But they're no longer self-fed—they get the same oats-corn-protein ration, but it's hand-fed once a day. The self-watering tanks, with heaters for winter, give the bred animals plenty of water. In winter Claire gives them all the choice alfalfa hay they'll clean up, too.

He uses a central farrowing house for both spring and late-summer litters. Sows or gilts are brought from pasture just a few days before they farrow.

Claire takes every possible precaution against worms and disease. Here's how:

Before sows are put in, every pen is scrubbed with lye and hot water—then sprayed with a mixture of lindane and chlordane. Before farrowing, sows are washed well. Udders are washed with soap and water, then sprayed with a lindane and chlordane mixture.

Each farrowing pen is equipped with guardrails and a corner pig brooder, heated with a 125-watt heat bulb. The sow's udder is painted every day with an iron-copper solution to prevent "thumps" in the pigs. Clean soil and choice alfalfa leaves are brought to the pigs every day to keep them healthy.

To get pigs off to a fast start, they're creep-fed in the farrowing house after they're a few days old. They get a pelleted pig starter which includes sugar, the 4-4-1 ground feed, and plenty of water.

Claire has a special pen for pigs that aren't doing well—he hates to lose a pig. It is equipped with a pig brooder, and these pigs get substitute sow's milk.

Immediately after castration and cholera vaccination, pigs and sows go to movable houses on pasture. There the pigs get the benefits of a legume-grass pasture, grain and protein self-fed in 100-bushel feeders, and water from large self-watering tanks. Pigs get the 4-4-1 grain and protein ration self-fed until

they weigh about 75 pounds. Then oats is slowly cut out, and the pigs are switched to shelled corn and protein, each self-fed separately. Pigs are easy to take care of and gain fast on this system of handling, Claire says.

He divides the clean pasture for the fattening hogs so older ones are in one part and the younger ones in another.

Claire not only raises hogs well—he also markets them well. Here's how: He breeds to have spring pigs come in February and March, and aims to sell them at the seasonal high-price period in August and September. Claire says he used to farrow in March and April, and his fat hogs beat most hogs to the market—but more farmers are moving earlier with their farrowing now.

His late summer pigs come in July and August to be marketed shortly after the first of the year —when the market has recovered from its November and December seasonal price slump.

Flies Can't Resist New Insecticide

Flies—especially the house fly—have developed a resistance to most organic insecticides during the past few years. A new insecticide is now in the market which has shown very successful results in recent tests.

This material—known as Malathon—is not as poisonous as DDT, and can be used without incurring too many hazards, reports J. N. Roney, Arizona extension entomologist. Two gallons of 50 per cent emulsifiable Malathon in 2 gallons of white Karo syrup or 20 pounds of sugar to 100 gallons of water is the recommended mixture to use.

Apply the mixture to corrals, trees in and around the corrals and in the barn. If you have a dairy don't use the mixture around the milk room. The material is effective for a period of 12 to 20 days inside buildings if it is not washed off. Outdoors, where the sun hits the mixture, the effectiveness will be lost in a shorter period of time. When applying the material, spray it on until it starts to run.

The mixture will not injure cattle that lick the walls. It has been used around poultry farms and dairys with promising results. The spray should not be applied directly on animals. Use it according to the above directions.

Arizona Extension

PACKAGED SILAGE

Will plastic bags replace the silo?

Condensed from New Jersey Agriculture

THE housewife who buys her salad greens in a plastic bag will have nothing on the dairy cow if experiments underway with "packaged silage" prove successful.

It's even possible that plastics may make present-day upright silos as obsolete as the cradle sythe in years to come.

It all started when a student, at Rutgers University, William Livingston, was performing the arduous job of coating the inside of a silo for the New Jersey Agricultural Experiment Station. Bill, whose father works for a company which makes plastic, came up with the idea: "Why not line the inside of the silo with plastic film and save all this work?" Charles H. Reed of the Agricultural Engineering Department carried the idea a step farther. "Why bother with silos at all? Why not put the silage in plastic bags?"

Last October, Reed had Bill Livingston fill four plastic bags with about 800 pounds of sorghum and soybean silage. They opened one in April and a couple more in July. The silage was sweet enough to make any cow drool. No spoilage. They had even buried one of the sacks over the winter to determine whether the soil would affect the plastic. It didn't. Another sack reposed on a termite colony with no ill effects. The fourth one is in a machine shed where it is exposed to possible rat damage. So far the rats have shown no interest.

Two large-scale tests are now underway. In June, a nearby farmer, John W. Mettler, Jr., of East Millstone, N. J., found himself with 200 tons of potential silage and no place to put it. He built two 100-ton stacks with a dump truck, packing the silage with a small tractor, and covered the stacks with plastic film. The edges of the plastic were buried in a trench dug around the stacks to keep out the air. The silage seems to be keeping well.

On July 21, P. D. Van Mater of Marlboro, covered a trench silo with plastic film after it had

Reprinted from New Jersey Agriculture, New Brunswick, New Jersey

been filled with 350 to 400 tons of silage. He used two 90-foot rolls of 13-foot-wide olive green vinyl plastic, joined with a 2-inch plastic tape, since his trench silo is close to 26 feet wide.

How about the cost?

Charlie Reed figures it this way. A silo costs from $15 to $20 per ton of capacity to construct. After the silo is constructed a farmer has to figure on about a 10 percent annual overhead, including interest on the investment, depreciation, maintenance, taxes and insurance. This means is costs him $1.50 to $2 per ton of silage just to own the silo. If silage can be put up in plastics for that much or less, it should be a paying proposition.

It cost Mr. Mettler about $2 a ton to cover his stacked silage. The cost of covering Mr. Van Mater's trench silo was about $200 or 55 cents per ton. He expects to be able to use the plastic film for two or three years, which would reduce the cost considerably. The film used on Mr. Mettler's stacks was thinner and will be used only one year.

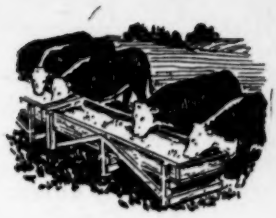
The agricultural engineers are now toying with the idea of constructing a trailer lined with a plastic bag which can be filled with chopped silage in the field. The trailer would then be hauled to where the silage is to be fed and the bag slipped off. A bag 4 feet in diameter and 8 feet high would hold about a ton of silage. A process of this kind would cheapen silage-making considerably.

Both Reed and Sprague emphasize that this study of putting silage up in plastics is just beginning and they don't pretend to know the answers yet.

Sheep Raising Profitable Possibility On Many Farms—There's room for a profitable sheep business on many farms, say two University of Minnesota livestock specialists. W. E. Morris and P. A. Anderson point out that most farms can grow the excellent pastures and high-quality legume roughage necessary in producing high quality market sheep at low cost.

A farm flock of from 25 to 100 purebred or grade breeding ewes can conveniently fit into most farming operations on the average quarter- or half-section farm, Morris and Anderson say. Except for fencing, sheep require little labor and only inexpensive equipment, buildings and shelters. Unlike other livestock, many lambs reach top market condition on grass with little or no grain feeding. *University of Minnesota*

New York's 500 Beef Club



Weaning better and heavier calves grosses $40 more per head . . .

Condensed from The Hereford Journal

M. D. Lacy, CORNELL UNIVERSITY

WEANING a high percent calf crop of top quality, heavy calves should be among the goals of every cattle breeder. Percent calf crop weaned, quality and weight-for-age all are important in weaning a profitable group of calves. Records taken on 25 New York farms last year showed that the farmers in the group who ranked high on these points grossed over $40 more on each cow than those in the program who were low in these respects.

One of these points is not much good without the other two. The percent calf crop weaned is the most important because without a calf the cow is just a boarder. Good quality calves that are small are not very profitable—neither are the big, plain ones.

Four years ago the extension service at Cornell University began awarding certificates to beef producers who weaned a 90 percent calf crop that averaged in the choice feeder grade and weighed at least 500 pounds (average) at 225 days of age. If a producer met all of these requirements he qualified as a member of the 500 Beef Club. This program grew out of a weighing and grading project started in 1947 to collect data that could be used in promoting a stronger cow and calf program in the state.

Co-operators enroll with their county agents or with the department of animal husbandry in the late summer and the calves are weighed and graded in October and November by the beef cattle extension specialist. A portable scale is used to obtain weights. All the calves are graded and management practices are checked at the time

Reprinted by permission from The Hereford Journal, Kansas City, Mo.

of weighing. A co-operator must have at least 10 calves of eligible age—dropped between Feb. 1 and July 1.

Only three producers or about 12 percent of the co-operators qualified for the award in 1949. In 1952 double that number "made the grade."

It seems that the weight-for-age qualification is usually the most difficult one to meet. Last year 80 percent qualified on percent calf crop weaned; 64 percent or about two-thirds on quality or weaned calves that averaged in the choice feeder grade but only 32 percent had calves that averaged 500 pounds at 225 days.

The data collected over the past several years have shown that there are five points that should be observed if one is to wean top-quality calves of good weight-for-age.

1, It is necessary to have good pasture throughout the grazing season. If native pasture is used, this usually means aftermath or some other type of supplementary grazing is needed during the dry months of the pasture season.

2, Good quality bulls with plenty of substance are a "must." There is no substitute for a good bull of the correct type.

3, Have a good quality cow herd. The bull cannot do the job alone.

4, Cows should be good milkers. The beef man is not raising milk cows and he certainly does not want females that have to be milked-out at calving time. Nevertheless, every cow in the herd should be capable of raising a large, fat calf.

5, Creep-feeding will help. Some might think this item the most important as far as weight-for-age is concerned. Not so. Pasture and milking ability of the cows are probably the most important as far as this item is concerned.

Charles Weston, Hereford breeder in Wayne County, was tops in the 500 Club in 1952. Mr. Weston is industrial sales manager for the Erskine-Healy Company of Rochester, and operates his little herd as a sideline. He has two sons that help him farm his 77 acres, which are 26 miles out of Rochester, near Marion, New York.

Last fall his 10 Hereford cows weaned 10 calves that averaged 578 pounds at 234 days of age or 91 pounds heavier than the average of all the calves weighed in the program.

Mr. Weston started his herd right by buying good quality females and mated them to a rugged bull with plenty of character. He has good pastures and creep-feeds his calves. Each year a field is plowed and seeded to a good pasture mixture. He

has had best results with a mixture of brome grass, alfalfa and Ladino.

You may say that the man with only 10 calves has an advantage. Maybe so, but how about the fellow in the program last year who weaned 44 calves from 45 cows and qualified for the 500 Club award. Also the man who had 30 cows and qualified. The breeder who was last in the program in 1952, weaned only 11 calves and they were 22 pounds below the average.

The size of the breeding herd has not been a factor in who could qualify. Some of the largest herds in the program have met the requirements of the 500 Club and some of the smallest have failed.

Father-Son Farming Agreements Advantageous

What will become of your farm? That question doesn't worry the increasing numbers of farmers who are operating under agreements with their sons.

E. D. Chastain, Virginia agricultural economist, says there are several advantageous factors which serve to make father-son agreements popular.

First, the arrangement offers the young man more opportunities on the farm—necessary opportunities if he is to stay on the farm in view of the offerings in non-agricultural industries. The high capital requirement is tending to push father-son arrangements ahead of many of the other ways of getting started in farming. Furthermore this type of arrangement is one way to meet labor problems.

Chastain points out that advantages can be listed in terms of not only the father and son. Other heirs are interested in the farm being kept in the family as a going concern, and are receptive to such plans.

Of course, Chastain points out, undesirable situations do sometimes result from father and son farming together. However, most of the causes of misunderstanding, financial difficulties, and general failure, can be foreseen and prevented. By carefully thinking through the considerations involved, a satisfactory agreement can be reached and put in writing. In some cases, it may be that the best answer lies in not trying such an arrangement.

Virginia Extension Service

TAILOR-MADE FARM EQUIPMENT

With machinery he makes himself, Marcus Cain farms 1500 acres and does it ALONE . . .

Condensed from Western Farm Life

Jim Norland

A DAWES County, Nebraska farmer is operating 1500 acres alone and finding enough spare time to add to his assemblage of "tailor-made" farm equipment that enables him to produce good crops with a minimum of labor.

He's Marcus Cain of Chadron, who has been farming for 38 years on the tablelands of western Nebraska, putting together an efficient and modern farmstead of his own design and construction.

From his farm home to the latest of his home-constructed pieces of equipment, Cain has satisfied his individual needs and desires to an extent that commercial designers and manufacturers could never approach. And new equipment is in the making in his well-equipped machine shop to make his wheatland farming easier and more efficient.

The equipment and other facilities which Cain has designed and built enable him to farm his 1500 acres with virtually no hired help—he hires a single truck driver to help out at harvest. His only steady help is his daughter, Marcine, who pitches in on the more womanly tasks of housekeeping, cooking and such items.

Speed and power are the keys to equipment design used by Cain. He keeps an emphasis on simplicity as well in his building of new equipment or remodeling of older versions used in his farming operations of past years.

Cain simply sees the need for a new or different piece of equipment and builds it, without benefit of blue prints or many of the other helps customary for builders of specialized equipment.

"It came natural for me to

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build and plan machinery without blueprints," Cain says. He occasionally makes rough drawings to serve as a guide but not as an exacting specification.

To get the combination of speed and power that he seeks, Cain plans what the actual power requirements of a given piece of equipment will be, then doubles that to obtain ample speed without overloading the engines.

That apparently rough system of estimating and planning have paid off with amazing success and accuracy. The new diesel-powered tractor which Cain is using for major farming operations, for instance, pulls 10 plows easily at about seven miles an hour. Five additional plows could be added with no undue power strain, he notes.

A weeder attachment which fits onto that 400-horsepower tractor unit can cover 200 acres on one short day, making speedy work of the 850-900 acres which Cain usually has under cultivation at one time.

A self-propelled combine which preceded commercially built units when it was completed 17 years ago has been rebuilt by Cain to handle the harvesting phase of wheat farming better. It, too, demonstrates the power and convenience factors which have gone into labor-saving farming.

The 20-foot unit uses two motors, one to propel the combine and the other to run the cylinder as it harvests the grain. And just to eliminate any inconvenience from rough ground over which it may travel, the combine has an added feature of tandem drive wheels which allows the wheels to oscillate over rough ground.

With the latest improvements, the combine's capacity is increased, and the pickup system has been improved so as to enable the operator to stop the feeder instantly should a rock or other foreign object be encountered.

Next year may see the start of operations for Cain's unique wheat planting machine, which he expects to complete next winter when outdoor agricultural activitiy is at a minimum.

Farmer-Builder Cain believes the new unit, combining ground preparation, planting and ground-packing functions, will mean quicker and moisture-conserving planting of spring wheat and other crops. The 24-foot planter, powered by two government-surplus Cadillac engines, will move over the ground quickly enough to cover 80 acres per day. Propelling power will come from a small engine between the two- 12-foot units of the tiller, while the Cadillac

engines will do the actual grain-planting work.

Farming and inventing started simultaneously for Cain, who began with improvements on a Farmall tractor and a potato combine.

He built his own refinery some 25 years ago to make gasoline (tractor fuel and distillate from crude oil). He later improved the small plant to a cracking plant for high test production, but shut that down during World War II when crude oil became unobtainable.

A self-propelled swather, improved just last year by the addition of new parts, added to the list of Cain's own custom-built farm equipment. That facilitated easier operation of the combine, also built on the Nebraska farmstead. To finish harvesting work in the quickest time and store his grain properly, there soon appeared a 30,000-bushel grain elevator.

Even with these completed projects and the equipment presently under construction, Cain hasn't stopped in his endeavors toward better and easier operation of his farm. He's constantly "looking around" for new ideas that he can gain from other machines, and equipment parts that can help him to produce better with his "lone-hand" farming operations.

* * *

Humus is most valuable to growing crops when it is breaking down. Humus helps hold moisture, nitrogen and other plant food in the soil and makes the soil easier to handle.

* * *

"I get the ideas from wanting to improve and speed up the operation," Cain summarizes. He appears to be well on his way toward getting the most out of his work.

With adequate and capable farm labor an everscarce commodity, Marcus Cain's equipment consciousness may represent a solution for western farmers who want to do a good job with a minimum of assistance.

Farm Mortgage Situation—The Farm Credit estimates that in 1952 there were 315,671 farm mortgages recorded—the smallest number of farms since 1945. However, the evaluation or dollar volume last year was a trifle over 1951 and two-thirds greater than the 1937-40 average. Last year the Federal land banks financed 14.2 per cent of thef arm mortgages, insurance companies recorded 19.4 per cent, commercial banks 27.2 per cent, individuals 28.9 per cent and miscellaneous 10.3 per cent.

Pick-Your-Own Harvesting

Helpful pointers on how to get your customers to pick your fruit . . .

Condensed from American Fruit Grower

Eldon S. Banta

"HOW can I get my fruit crop harvested in time!" is the cry of many, many growers. Someone happened on the idea that maybe folks would like to come to the farm and harvest their own fruit. At any rate this practice is growing in importance, especially in the vicinity of the big industrial areas.

If you are considering letting the public harvest your fruit crop there are a few things you might keep in mind. To approach the problem scientifically, your first step is to survey the population within a 25-mile radius of your farm. How many people live there? How many families? Is it a young and growing community? Is industry expanding here? What are the general industrial wage rates? What are the prices of fruits in retail stores in season? What is the average quality of such fruit? How much of each kind of fruit is sold through regular channels during the season?

Then on the other side of the picture find out how much of a given fruit is grown in your area and how it is sold. Once you have a fairly good picture of your producing and consuming area, you are in a better position to predict the outcome of a pick-your-own venture than someone who jumps into it blindly.

What kinds of fruits fit into the practice of pick-your-own? It seems that almost any kind of fruit can be adapted. Strawberries and raspberries take the lead, with cherries and peaches following. The idea is just being developed with apples.

The intended use of fruit helps to determine the success of public picking. For example, berries, cherries, and peaches make excellent frozen products and are especially delicious if frozen as soon as picked.

Your success in this field may

Reprinted by permission from American Fruit Grower, Cleveland, Ohio

depend upon how well you organize and supervise the pickers. Clear instructions should be given to pickers as to how, what, and where to pick. You are interested in the maximum harvest and the greatest number of satisfied customers. Careful instructions and considerate supervision can usually secure both.

In berry fields some growers feel that one supervisor to 25 or 30 pickers is essential, while others can do the job with 50. The big job in watching the actual picking is to make certain that all ripe fruit is picked, and not just the large perfect ones.

Prices vary with place, methods, and abundance of fruit, as well as market price. Most growers request pickers to bring their own containers. These they weigh in with the weight written on the container. When the picker leaves, the weight of his berries is taken and he pays so much per pound.

The difference between this price and the regular retail price is usually equal to the picking rate, or slightly more to cover the cost of the container. For example, strawberries may be selling at 50 cents a quart, and pickers are paid eight cents a quart for picking. Suppose a quart basket costs one cent. Then if your pick-your-own customers are picking in quart containers, you would charge them 41 cents a quart.

Many variations of this exist. Some charge a flat rate throughout the season, others lower the price during the peak of harvest so as to encourage heavy picking. The tail end of the crop is frequently sold at a low price because of small size and lower quality of fruit.

Some sort of publicity is necessary. Local newspapers and radio stations are used by many to give the public dates and time of day to come for a particular fruit harvest. Roadside directions are useful and should be attractive.

You can find that pick-your-own harvesting is a pleasant and satisfactory way to sell your fruit crop if you are careful, considerate, and do a little planning.

Recent discovery that X-disease in cattle can be caused by lubricants makes it important that cattle be kept away from grease racks, machinery sheds and oil drums. Cold weather causes cattle to come closer to the farm buildings and caution against this danger is advisable. Chlorinated napthalene compounds are known to be a causitive agent of X-disease which has made inroads on the cattle population in many of the states.

Marks of a GOOD MILKER

One thousand cows and 5,000 calves have been measured and tested to determine if what's on the outside shows what's on the inside . . .

Condensed from Agricultural Research

Can a cow's body form tell us about her producing ability? Or can we predict, from a calf's conformation, the sort of cow she will be?

There's more and more evidence that the answer to both questions may be yes. A recent discovery, reflecting 30 years of research, is that good milk makers are usually cows with long, deep bodies and long heads.

What scientists are looking for, of course, is a sounder way to select individual animals—young and old. Knowing how to spot producing ability would be helpful not only to classroom teacher and show-ring judge but also to the dairyman who buys, sells, and chooses cattle for his own herd. This could mean millions of dollars a year to the dairy industry.

The idea is at least as old as the show rings of a century and a half ago. According to long-popular theories, a cow's outside form is related to the size of her body cavities, chest, and internal organs. Large cavities and organs are supposed to mean strong constitution and good feeding capacity. And these, so the teaching goes, are essential for high, efficient production.

The truth is that such theories were never backed by much in the way of research. Beauty of form was too often given undue importance.

W. W. Swett of the Bureau of Dairy Industry wasn't satisfied with these theories, and he set to work in 1923 to find the facts. The first thing he did was to study nearly 400 cows at a Chicago packing plant to see if he could discover a relation between external form and internal anatomy. After several measurements were taken on

Reprinted from Agricultural Research, Washington 25, D. C.

each cow, she was slaughtered and the carcass and internal organs were weighed and measured.

Swett found that internal anatomy may vary a great deal, even with animals of the same body size and shape. It seemed doubtful that the feeding capacity of a cow could be judged on the basis of outside form. On the other hand, body depth seemed to be a reliable indicator of the size of internal organs.

The results led to a project that has been carried on for 30 years.

Using cows that had served in the experimental herd at Beltsville, Swett began to collect the data he needed to find relationships among (1) external form, (2) size of organs and body cavities, and (3) production.

Each cow had shown her milking ability. Before slaughter, she was photographed and 37 body measurements were taken. Then 82 postmortem weights and measurements recorded.

Some 20 State experiment stations joined in a cooperative arrangement to handle their discarded cows in the same way. The information was assembled at Beltsville.

Swett's goal of 1,000 cows has now been reached, and the job of analyzing the data is underway. One part already finished deals with the relationship between body measurements of 350 Holstein and 346 Jersey cows and their records of milk production.

Results seem to indicate that neither live weight nor body width has much correlation with production. Body circumferences were significant in Holsteins but not in Jerseys. Body heights and lengths were definitely correlated with production in Jerseys, less so in Holsteins. Head widths seemed to be important. But length of head was the body measurement most consistently correlated with milk production in both breeds.

Results of other phases will be published as analysis is completed.

Naturally, the earlier that good selections can be made, the better it will be for the dairyman. He loses money when he spends 3 years of labor, feed, barn space, and worry raising a calf that turns out to be a poor milker. Furthermore, a method of calf selection would enable breeders to evaluate transmitting ability of herd sires 2 years earlier than is now possible.

That's why dairymen and scientists the world over have shown so much interest in the Beltsville system of examining

calves' mammary glands. Rudiments of these glands can be felt with the thumb and fingers as early as 1 month. Preliminary study indicated that glandular development at 3 to 5 months is a good indicator of future producing ability.

More than 5,000 calves have now been checked in this way at Beltsville and nearly 40 State experiment stations and other cooperating agencies. Milk records these animals make will tell us a great deal about the reliability of the gland test.

Scientists are now finding evidence that the body dimensions of a heifer calf can give us a good preview of her form as a cow. The development of some 400 animals at Beltsville has been carefully followed from birth through the first lactation, and in some cases as long as 6 years. Many of the measurements at 3 months are closely correlated with the same dimensions in the cow. Perhaps it will be possible to connect this relationship with milk production.

Salt And Water Draw Cattle To Undergrazed Areas

More uniform grazing of range or pastureland can be obtained, suggests Paul S. Pattengale, Colorado animal husbandman, by providing water, salt, or shelter in locations that have proved to be least popular with the grazing animals. Better distribution of grazing leads to more efficient production of both forage and livestock, Pattengale points out, because it prevents overgrazing of some areas while forage in other areas goes unused.

A study of forage utilization by cattle made by the U. S. Forest Service over a period of 6 years showed that development of watering places is one of the best ways of getting better distribution of grazing. Cattle were successfully attracted to upland ranges and away from heavily grazed bottomlands through this means. Even temporary watering stations that took care of only a few head of cattle and lasted only a short time proved well worth while.

Salting was another successful means of attracting cattle to less-favored areas. And it is not necessary to locate salt and water close together, as is commonly believed. Studies in California showed an average lapse of nearly 7½ hours between the time cattle ate salt and drank water, even though they could have walked directly from salt to water in 20 minutes.

Colorado Extension

Misery for Sheep

. . . and hard on the pocketbook of the sheep owner. That's foot rot.

Condensed from The Dakota Farmer

Dr. J. W. Bailey

FOOT ROT is generally recognized as a serious sheep disease. Unlike foot rot of cattle, it is highly contagious and will sometimes spread through an entire flock in a short time.

At least two, and possibly three, different germs are involved in attacks. The actual cause is one called Fusiformus nodosus, but it has to combine with another called Treponema penortha before typical lesions are produced. The disease has a tendency to appear almost entirely during wet seasons, and is seldom seen in the dry months of the year.

Most outbreaks are started in one of two ways. Sometimes they are due to causative agents that have been left in mud or wet areas of pasture by infected sheep that ranged there earlier. In some cases animals have picked up the disease after being driven over trails that diseased sheep had used a day or so earlier. On other occasions the germ-bearing mud has been carried to farms on the shoes of people, feet of animals, or tires of automobiles. However, this sort of thing probably doesn't happen very often, for the causative germs aren't able to live in soil more than a couple of weeks under the best of conditions.

The usual source of infection is represented by the feet of chronically affected sheep that act as carriers, even though they often show no signs of lameness or other common symptoms. The causative germs have been demonstrated as able to live in the feet of such carriers for at least three and one-half years. These animals may be brought in as purchased stock, or they may be home

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sheep that evidently have completely recovered from an attack of foot rot.

Regardless of how the germs get into a flock, actual infection is dependent on some kind of a foot injury, for the bacteria can't penetrate unbroken skin. This can be almost any kind of a cut, with a condition known as "scald" often being to blame. Dirt and sand lodging between the toes can cause sores, while overgrowing of the hooves may encourage the formation of cracks and separation of the wall and sole of the hoof. When infection is established, affected sheep become lame, lie around a great deal, lose weight, and usually show swelling around the top of the hoof.

Examination will often show that the sole is separating from the foot, starting at the heel and loosening toward the toes. In late stages the wall of the hoof may also separate from the rest of the foot. This disease usually is told from other foot troubles of sheep because it shows evidence of spreading.

The contagious nature of foot rot makes any treatment a flock proposition, with the first step consisting of examining the feet of all sheep. Those showing signs of infection are immediately isolated from the others, and their hooves pared down so underlying tissues are exposed.

The most practical way of treating a large number of sheep calls for walking the animals through a solution of copper sulphate or formalin. One of the better arrangements makes use of a shallow water-tight box that is about 30 feet long and a couple of feet wide containing three or four inches of solution. It is fitted with a board fence on each side and a gate at each end. When set in a door or opening in the fence, a number of sheep can be admitted, compelled to stand in the solution for a suitable length of time and then released at the other end so another bunch can be brought in.

The strength of the solution determines the length of time sheep are held in it. For example, they will need to stand only ten seconds in solutions made of 3 pounds of copper sulfate to the gallon of water or 10 gallons of formalin to 100 gallons of water, while they should stand for 5 or 10 minutes in weaker solutions like 5% copper sulfate or 2% formalin.

Healthy sheep are run through the solution first, and then moved to a clean range where they are regularly checked for new cases. The infected sheep are then run through, afterwards. being held in strict isolation from others, with treatment being repeated every

day for as long as needed. The flock is considered as recovered when healing is complete and no new cases appear for a month. After being run through the foot bath a final time the infected unit can then be returned to the healthy flock. Some of the really stubborn cases may require special treatment by hand with other remedies like penicillin ointment.

Animals that fail to improve within a couple of weeks are probably best destroyed and burned. Treatment is most effective during the dry late summer months when the disease is least serious and feet are easiest to keep clean.

Prevention of foot rot in sheep is largely a matter of good management, with these two practices being especially recommended:

1. Consider all purchased sheep as infected and treat them once in a foot bath as described. Then isolate them for two weeks or more to see if they're going to come down with the disease. After that they can be treated some more or moved into the home flock as clean animals.

2. Consider all home sheep as having been exposed after they've been shipped or moved to neighboring ranches and ranges for some reason or other. Then put them through the foot bath and keep them isolated for a couple of weeks to see what they're going to do just as in the case of purchased animals.

Smart Indian—A newspaper down in Oklahoma published a photo of a run down at the heels farmhouse and badly eroded fields. Readers were asked to comment, and an Indian won with this:

"Picture show white man crazy. Make big tepee. Plow hill. Water wash. Wind blow soil. Grass all gone. Squaw gone. Papoose, too. No pig. No corn. No hay. No cow. No pony.

"Great Spirit make grass. Indian no plow land. Keep grass. Buffalo eat grass. Indian eat buffalo. Hide make tepee, moccasins, too. Indian no make terrace. No build dam. No give damn. All time eat. No hunt job. No hitchhike. No ask relief. No shoot pig. Indian no waste nothing. Indian no work. White man heap crazy."

Ignorant and uncivilized red man? It's obvious that this Indian's got something here.

Beloit News

Take a Gander at the Goose

He is coming back strong . . .

Condensed from Nation's Business

Gerald Movious

LEANDER, the gander, is now waddling back into America's economy. The goose promises to become a multi-million dollar business after many decades as the merest ripple in the current of industry.

Leander's vest-works of light, warm down are prime stuff for Air Force gear, sleeping bags and military hospital pillows, and our feather merchants have been rushing around like mad trying to fill the needs of the armed services. The price of down has quadrupled in the past three years.

Cotton growers are hiring young geese in mass gabbles as "hoe hands," because Leander asks no pay except the weeds he eats; he lets the plants alone. The price of breeding stock has doubled in a year.

The reliable poultry trade press views the situation with restrained enthusiasm, but it can't stop the flying rumors of fortunes to be made in geese with little capital and less effort.

Have you had roast goose lately? No?

Then you belong to the overwhelming majority of Americans who have forgotten—or never had a chance to try—the rich, dark meat of a properly cooked domestic goose. But if you're a man who likes to chef it now and then, especially for some extra-festive evening, roast goose is for you. Serve it hot at a sit-down dinner or cold from the buffet, and you'll win kudos for a change of pace in the ham-and-turkey routine of the holiday party circuit.

But the price! Ah, yes, the price. Last year, goose retailed at up to 95 cents a pound, eviscerated and frozen.

But as Leander's tribe increases, you will be able to get a roasting goose at a price competitive with that of other table

Reprinted by permission from Nation's Business, Washington, D. C.

birds. Even goose liver sausage may come within range of the average household budget.

The French have virtually cornered the market for *pate de foie gras,* exporting around $700,000 worth of it a year. We don't have the truffles with which the French flavor their product, but some Americans are figuring that in a few years hence we can at least dent the French monopoly with a comparable domestic product.

The French force-feed, or "noodle," their geese by hand to swell the livers to abnormal size, a practice that only the huskiest birds can survive. The art of hand noodling is little known among us, but an American-made device slips a funnel down the bird's gullet and gets the food where it belongs without any of it lodging in the windpipe.

But goose liver sausage talk in America is not in terms of bigger livers per goose, but in terms of more livers, which means more geese. That's the basic need all the way around.

Once there were four or five geese per person in this country, but the last time it counted bills the Department of Agriculture found 1,500,000 geese on farms. That is less than two-tenths of one per cent of all the poultry in the United States. Even ducks outnumber geese by ten to one.

What happened to Leander?

Progress. That's what happened to him, but you can't keep a good bird down. Leander is a feathered object lesson in the resurgent powers of self-reliance. His ability to paddle his built-in canoe almost from the day he pips the egg enhances his value in our economy today just as it won him both honor and respect in our economy of day before yesterday.

Our forebears approached roast goose with worshipful jaws, for Leander's virtues were esteemed above those of the chicken, the duck, the pig and the sheep or even the cow. The scrawny hen had to have her ration of grain, but laid eggs only when the mood gripped her. Dressed out, she was hardly a full meal for one man, never enough for two. Roosters were composed of gun-metal drumsticks, shoe-leather breast meat, and the rest was mostly crow.

A pig is an intractable traveling companion. Families affluent enough to own cows or sheep were seldom in the van of the great western trek. But Leander and his wives were indispensable passengers in the Conestoga wagons and the prairie schooners, along with

that other unsung hero of the homestead days—the cat.

The cat went along to keep field mice from purloining the painfully harvested grain. The goose required no grain at all, except meager handfuls in the dead of winter. He asked no shelter, squatting in the snow on the lee side of the claim shack. But he rewarded his owners with feathers for their beds; his rendered fat was salubrious shortening and a substitute for butter. Externally applied, goose grease was considered a sovereign remedy for colds, coughs and bronchial wheezes.

Goose meat was a welcome change from a steady diet of game. Venison was dry; moose meat was more so; bear was gamy, and wild waterfowl tasted "sort of foolish" if you had to eat it regularly.

The goose was seemingly immune to disease and able to fend for himself against most predatory animals. A coyote was likely to steer 'way around a grown gander. When infuriated, Leander could break the beast's neck with a blow of his wing.

The cagey fox and wilier wolf knew that latching on to a goose was the rough equivalent of trying to lug away a greased calliope in full blast. The dogs would be on them before they could throttle Leander and get a grip on his roly-poly carcass. Indeed, the goose spelled the dogs on sentry duty. Rover knew the geese would rouse him out at any unusual sound in the night.

Small wonder, then, that a pen of geese was included in the dowry of every bride. The poorest family contrived to give the girl at least a pair. Leander was top bird of the farmyard.

Then came the industrial revolution. It gave agriculture a vast new market. As the chicken and its eggs became cash crops, poultry breeders doubled the egg production of the pullet and put tender meat on the bones of her brother, the cockerel. The dairy cow needed the pasture on which the goose had foraged, and as a producer of ready cash in the form of milk and cream, she had priority. Families dwindled in size, and a roast goose became a formidable-looking entree. Medical science poohpoohed the therapeutic claims for goose grease. Feathers lost their charm as central heating came along. Quill writing is pretty, but tedious, and another market for the by-products of the goose virtually collapsed

when etiquette frowned on the toothpick.

But Leander had kept one webfoot in the stream of the future. For years, we had leaned on Poland, Hungary and Czechoslovakia for down and feathers, those three nations supplying 85 per cent of our needs at a reasonable figure. Came the spring of 1950, and the price floated up on the wind from Korea.

At that point, Leander took a new lease on life. OPS had a ceiling price of $8 a pound on prime down. Spokesmen for the goose - raising fraternity, which is still a mighty small one, are predicting a steady market for prime down at $8.50 per pound, regardless of what happens in the hot-and-cold running war.

One of these spokesmen is Dean Stahmann of Las Cruces, N. Mex., who cheerfully predicts he will be making $125,000 a year from his geese "as soon as I really get going."

He 's doing all right at the moment.

Mr. Stahmann, an engineer by training, was a pecan and cotton grower. He still is, but so much in the goose business today that his flock looks—from a distance—like a white and undulating sea. He is running 7,500 breeders, and during the laying season last spring they were producing 3,300 eggs a day. His incubators were bringing off a daily hatch of 2,200 goslings.

Mr. Stahmann sells the goslings to other cotton planters at 70 cents each. At the end of the cotton growing season, he buys them back. The goslings are now ten-pound adolescent geese.

Everybody's happy. The cotton grower has had his fields weeded for free by original "wet backs" who involve him in no unpleasant legal complications whatever, foreign or domestic, which can't be said of all stoop labor. Mr. Stahmann runs the birds through his own processing plant and markets them at eviscerated weights of about eight pounds. He's content with a 20-cent profit per bird, and housewives have been snapping them up.

His take from goose down and feathers is virtually velvet. The golden egg fairy tale has become reality for him.

A paying goose operation takes a husky capital investment in birds and land. You need a minimum of one acre of grassland for each 25 birds, and 15 birds to the acre is better.

Last year you could buy mature, run-of-the-flock breeding stock at about $10 a pair. This

year producers were getting $4.40 for one little started goose, which means a feathered-out gosling. Started geese from the more superior strains were offered at $13 each and baby goslings at $10.50. Medium-priced hatching eggs were 85 cents each.

But the big problem in the goose game is getting along with Leander. This is not easy. You can forget all that nonsense about the "silly goose." You can forget history. A more sagacious bird never let himself be trapped into domesticity, but his virtues are balanced by stubbornness and a highly nervous disposition. Leander is mighty sot in his ways.

The goose hasn't changed much since his noisy gabbles saved ancient Rome from a sacking by the Goths. He likes peace and quiet but is unconcerned about yours. You are expected to walk quietly and hush up in his majestic presence. If he chooses to make the night hideous with banshee music, it is none of your business. He thinks the right to sound off belongs to him alone, and he is never in a hustle.

A Leander of my personal acquaintance was 20 years old when I was ten, and he's still going strong. Managing Editor Durell Davis of the authoritative *Poultry Tribune* has a record of a goose who was killed at the age of 101 in a fight with a horse. With such a life span, the goose has no special interest in the multiplication table. A modern hen will rattle out 240 eggs a year, but she's a hag at the age of three. Mama Goose may lay about 30 eggs her first year, 40 or 50 for the next five years and then perhaps a yearly clutch right up to 50 or older.

If there's one thing Papa Goose resents, it is interference with his family life. The wild goose is monogamous, while domesticated Leander is polygamous, but not promiscuous like the chicken and the turkey. He prefers to pick his own bevy of wives and entertains strong notions against separation from them.

Maybe he'll marry up with the brides that you choose for him, but just as likely, he will give you a go-to-hell sneer and spend the rest of his life in monastic meditation.

Unless you're a semiauthority, you can't even tell Mama Goose from Papa Goose.

The Pilgrim goose is the sole exception to the look-alike rule. Papa Pilgrim is white with blue eyes; Mama is gray and white with dark, hazel eyes, but the Pilgrim is more of a show bird

than a working stiff—rare and costly.

Dean Stahmann raises the White Chinese goose, a trim bird with the appearance of a small swan. He swears by its laying ability and comparative fertility. Besides, it produces white feathers which the market prefers to colored ones.

One bird will yield a third to a half pound of down and feathers; but here's a gimmick that you may know as common knowledge, though a surprising host of people don't:

You can't have your goose and pluck it more than once, and that is only when it has passed to its reward. Once upon a time, live plucking was a common practice, but folks discovered that it didn't pay. More often than not, it ruined the goose. Besides, we grew more chicken-hearted. Today, the SPCA would be down on you like a duck on a June bug if you live-plucked a goose within its jurisdiction, while associated humane societies all around the country are set to sick the law on you if the growing goose business develops any trade practices unfair to Leander's civil rights.

After all—some old Leander grew the quills that wrote the Declaration of Independence, the Constitution and the Bill of Rights, and his descendants of today are firm believers that the principles contained therein apply to geese as well as people.

Warning Service Aids In Disease Control

Federal-state scientists since 1949 have been teaming with industry and growers to control four serious crop diseases. S. B. Fenne, Virginia plant pathologist, says the Plant Disease Warning Service is served by plant pathologists in 37 states.

The pathologists keep a special watch for the occurrence and spread of late blight of potatoes, late blight of tomatoes, blue mold of tobacco, and downy mildew of cucurbits (cucumbers, squash, and melons).

When the diseases threaten, growers and county agents are alerted, spray schedules are provided, and manufacturers and distributors of fungicides and other materials are informed. The warning service has been a major factor in making fungicides available when and where they are needed, and the emphasis of reports on proper control has led to wider and more efficient use of the chemicals, Fenne said.

Virginia Polytechnic Institute

Remade Farm

What happened to one farm that had its "face lifted" in one day before 30,000 people . . .

Condensed from Soil Conservation

Arthur B. Beaumont, STATE CONSERVATIONIST

THAT the glaciated upland soils of New England, molded and processed by nature for forests, can be transformed into some of the most productive grasslands in the world, is being demonstrated on a dairy farm in the town of Adams, Mass. Situated in the Berkshires, this farm is owned and operated by Mr. and Mrs. Walter N. Hadala, with some assistance from high school daughter Doris. From a somewhat "rundown" farm not producing enough forage to feed 11 head of stock to a productive grassland farm carrying 37 head is the accomplishment of this family in a little over 3 years through the application of good soil management practices.

Fortunately for the Hadalas, there came an unusual opportunity to have their land improved quickly and at little cost to them. The farm proved to be just what the Berkshire Soil Conservation District and the county Extension Service were seeking for a demonstration of soil and water conservation practices. Heavy equipment moved in and did in a day jobs which ordinarily would be done by the average farmer over a period of 5 to 10 years, all according to a land use plan developed with assistance from technicians of the Soil Conservation Service. Some 30,000 people attended the demonstration, and probably as many more watched by television.

Pastures thickly studded with stones and large boulders were cleared. Several hundred feet of stonewall were either buried 6 feet deep or hauled away to a ravine. Now these fields are carpeted with grass and farm machinery rolls easily across them. A farm pond of 250,000 gallons capacity was dug near the buildings for use in case of fire and to supply emergency water for the stock. It is used now for recreation and may

Reprinted from Soil Conservation, Washington, D. C.

later be stocked with fish. A diversion terrace was constructed to pick up surface water for the pond.

A multiflora rose hedge was planted to serve as a fence between pasture and mowing, and most of it is now large enough to turn cattle. Some Class I land was cleared for crops, and some trees were planted on land not suited to agriculture. These trees are now knee to hip high.

Aware that natural forest soils cannot be transformed into good croplands without the addition of lime and fertilizer or manure, the Hadalas applied these in generous amounts before seeding or reseeding. This is why the farm is now able to produce 255 tons of early-cut grass silage and 28 tons of rowen hay in a droughty season. The hay is used for young stock and to supplement the silage. Says Walter Hadala: "When we were buying both hay and grain we knew we were working for someone else, but now when we can raise roughage like this and buy only grain, we are working part time for ourselves."

In 1949, the year the farm was made over, the herd average was 8,219 pounds of milk with 320 pounds of butter fat. Three years later the herd average was 10,939 pounds of milk and 414 pounds of fat. This was accomplished with more and better roughage, by getting rid of low producers, buying a few better cows, and raising excellent heifers that now lead their herd in production.

The Hadalas plan to continue improving the farm through establishing more conservation practices and growing better grasses and legumes.

Supplement Helps Hogs In Cornfield

Does it pay to feed supplement when you're hogging down your cornfield? Dr. J. A. Hoefer, livestock nutrition researcher at Michigan State College, contends that it does. And 13 corn belt feeding tests back up the assertion.

The tests show these results: Hogs in the cornfield that were fed supplement each gained one-half pound more per day than those eating just what the cornfield afforded. Each bushel of corn produced four and a half pounds more pork when supplement was fed. Each pound of supplement saved 6.4 pounds of corn.

And, says Dr. Hoefer, you can figure it another way. If corn were worth $1.25 a bushel, you can afford to pay as much as 12 cents a pound for supplement. *Michigan Extension*

IT TAKES GOOD MANAGEMENT TO SUCCEED WITH HAY AND PASTURES

Condensed from Agricultural Situation

Jerome K. Pasto

GRASSLAND farming is livestock farming. Grasses eventually must be marketed as milk, meat, or other livestock products and the conversion can be done most profitably on the farm where the grasses are grown. This calls for a knowledge of both crop and livestock production, and, equally important, for an understanding of how to work the two together to get the most profitable results.

Forage crops require the same knowledge of adapted varieties, soil requirements, liming, fertilization, harvesting, preservation methods, and so forth, as do other common farm crops. On most farms these practices with respect to grasses have not received their due share of attention.

In some respects grasses demand even better management than other crops. In harvesting wheat or corn for grain, for example, a farmer has considerable leeway from the optimum, both in time and method of harvesting, without seriously affecting the quantity or quality of grain produced. But a few days too early or too late in harvesting forages may greatly reduce either their yield or feeding quality.

Grassland is an across-the-board job. Successful grass growing does not end with production of a good forage, for the forage must also be efficiently used. The heart of the solution to this problem lies in a knowledeg of feeds and the techniques of feeding. Within a limited range, forage and grains may be substituted, one for the other. But even the best feed will not produce milk economically unless fed to cows

Reprinted from Agricultural Situation, Washington, D. C.

with high inherent capacity to produce milk. The whole grassland program can be no more efficient than the conversion of grass to livestock and their products. The substitution of high-quality grasses for other harvested crops in the cropping system must result in lower purchased feed costs per cow, in higher production per cow, or in more units of livestock per farm if it is to be profitable.

A few farmers have mastered the know-how of producing good forage only to fail in utilizing it properly. A farmer whom we know, for example, learned how to produce good orchard grass-ladino hay and pasture. He also learned how to grow birds-foot trefoil. In June, when we visited the farm, his cows were up to their ribs in orchard grass-ladino pasture. Two other excellent grassland areas were untouched. Not only was this farmer producing good-quality roughage, which was going to waste, but the rapidly growing orchard was crowding out the legumes. This excess herbage could have been ensiled and fed in the late summer when green feed was desperately needed, or it could have been made into hay. As it turned out, it was a costly resource wasted, for the farmer didn't turn what he produced to good use.

Some farmers have not learned how to raise good roughage, even though they have developed strong points in other parts of their business. A farmer whom we know had hay and pasture that never reached more than 20 per cent legumes, yet in his barn were big cows with plenty of potential to produce milk. He had to feed grain heavily to maintain production. Obviously his "field management" was not in tune with his "barn management." His grassland program was still on a sour note.

But many farmers have worked out a well-rounded grassland production-and-use program for their farms. They consider each phase of the program important, and keep the whole thing in balance. Take the actual case of a successful farmer of our acquaintance, for instance. This farmer had added a few cows to his herd to get a larger and more efficient business. But he soon discovered that he was short of hay, and for several winters he had to buy some. Then he started to improve his meadows by proper liming and fertilization, and selection of adapted legumes and grasses. At the same time he did some pasture improvement work—No use feeding weeds in the summer and good hay in the winter, he reasoned. Cows do best when

they can eat well the year round. This is part of the "balance" in the program. Today his pastures produce far better feed than before, and the herbage is thick enough to permit the cows to stay easily within cruising speed and still get a rumen full. In fact the farmer has extra pasture in the spring. He fences off part of it that he can work with machinery. This he clips and puts into the silo for July and August feeding when pastures are generally short. He pastures the clipped area after it gains second growth. The silo does double duty because later it is filled again with corn or second cutting grass for winter feeding. Everything this farmer produces he uses.

One of the strong points of a grassland program is the flexibility of the grass crop in method of use.

Grass can be ensiled, cut for hay, or pastured. Like a good athlete, grass is a triple threat. Hardly anything else a farmer grows can boast of this. It means that the grass farmer can adjust his farm-management practices to meet seasonal conditions, even after the crop has been planted, and this is a big advantage.

Most management obstacles in the way of profitable grassland farming can be solved by individual farmers, and not all solutions call for more cash outlay. But, the development of new grasses, new fertilizers, new methods of harvesting preservation, and so forth are not within the individual farmer's power to solve. They are left to the scientists in experiment stations and in industry. Once these physical limitations have been reduced by others and translated into new farm practices, farmers soon learn to use them. Grassland farming calls for good management and this is within the reach of nearly all farmers who desire it.

A Small Flock of Ewes—There is a place on many farms for a small flock of ewes. These animals subsist during the greater part of the year on material which would otherwise be wasted. Relatively little work is required to care for them and they certainly "boost the bank account" during seasons when there might otherwise be comparatively little cash coming in. The wool clipped from the ewes normally goes to market in May before any of the new crops are ready and lambs from the flock can be made ready for market in August when the income from these will help to pay for the new outfits necessary to start the youngsters off to school.

Northwestern "Ag" Letter

What's Happening To The Weather?

You're right! The weather is changing and farmers may well be concerned . . .

Condensed from Everybodys Poultry Magazine

Frank L. Platt

IT'S not an old man's fancy. Grandfather's tales about the weather are being documented with proof. Temperature records show that the climate of the Northern Hemisphere is changing. The summers are getting hotter and the winters are shorter and milder. In this warming up process the rainfall is becoming more scanty in many places, and there is less snowfall to replenish the sub-soil moisture.

Summer and winter have not failed to follow one another, nor will they. From the beginning, the earth has made her revolution around the sun every 365 days, always holding a constant tilt to her axis of 23½ degrees, thereby establishing the seasons, and varying the lengths of day and night through the year. Fortunately, this old world swings true to her course and in good balance. But there is some variation in the heat retaining properties of her atmosphere.

There is nothing new about this oscillation in the earth's climate. There have been recuring warm and cold periods in her history. They do not leap suddenly, but grow gradually. The present trend has gone far enough to indicate that we are now in a climatic cycle: Glaciers in Alaska and Greenland are receding. Perpetually frozen land in northern Canada is thawing and the forest has started moving into the hitherto barren tundra, a fact so noticeable and so important that the Royal Bank of Canada issued a bulletin on "Our Climate and

Reprinted by permission from Everybody Poultry Magazine, Hanover, Pennsylvania

Our Weather." Crops are being grown on uplands in Scandinavia that had laid under ice for 600 years. Ships are docking at Spitsbergen nine months in the year, whereas 30 years ago that port in the Arctic Ocean was open to shipping for only the three months of summer.

Nothing affects civilization more than climate. This is so because man depends for his food upon the earth's plants and animals, and they are directly subject to the weather. If the temperature should rise only one degree a year, within a century all would perish. When scientists talk about "absolute zero" and thousands of degrees above zero, one realizes that the range of temperature that life can bear is as narrow as a thread.

The forward and backward motion of heat and cold upon the earth's surface, can make today a perfect contradiction to yesterday or last week. A very hot, dry spell may be broken by blessed rains. An unusually backward and chilly April may be followed by a torrid July, as was the case this year.

New York City started 1953 with an average daily temperature in January of 5 degrees above normal. By July 4th Texas had recorded 47 different days when some place in that state had reported 100 degrees or hotter. The heat moved up the Mississippi Valley, establishing above average records in Illinois and Iowa. Corn flourished, with prospects for the second largest crop of this feed grain ever to be produced in the United States.

After a cool spring, hot weather came East, with Syracuse, N. Y., registering the ninth day of 90 degrees or more on July 18, compared to seven such days for the whole of an average summer. The average daily temperature in Syracuse is now running 3 degrees higher than it did 50 years ago. The temperature in Philadelphia is averaging 4 degrees warmer than a century ago. In Montreal, where official readings have been kept for 70 years, the rise is 2½ degrees.

Along with the rising temperatures there are signs of a diminishing rainfall. Annual rainfall has decreased 3.81 inches in New Jersey in the last 50 years, and precipitation is down 3.48 inches in Wisconsin and 3.78 inches in Oregon on the Pacific side. In the high plains region of the Southwest, more water is being pumped than nature replenishes, and the Rio Grande River went completely dry at Laredo, Texas, this past summer.

In some places the depletion of ground water is more rapid

than nature's replacement. Long Island is a case in point, where there has been seeping of sea water into wells. By 1960, with an estimated population of 180,000,000 people, there will be a proportionately heavier demand on the water resources.

There have been some gigantic cycles in world climate. There was a time when tropical palms grew in New Jersey. At another pre-historic time, an ice cap covered the northern states. It is conjectured that so much of the ocean's water was congealed in that great glacier that the Hudson river extended 300 miles farther out to sea. The ancient channel of the Hudson is still there, below the ocean, but the evidence of how it was formed is not complete.

Within the age of man and his recorded history, it is well known that the climate of the world has undergone changes that affected him deeply. When Babylonia was the center of civilization, the Euphrates and Tigris alleys are believed to have had about the same amount of annual rainfall as now feeds the Susquehanna river. Mesopotamia largely lost that sustaining rainfall, and Arabia, Persia and on to India, a distance of two thousand miles, is today mostly desert. The city of of Peshawarun, estimated to have had a population of 100,000 people, has been rediscovered where it was buried in the sands when it lost its water supply.

An ancient Greek philosopher observed, "The first of things is water." Certainly it ranks with heat and cold in shaping the history of man upon this planet. When the Oxus river stopped flowing to the Caspian Sea, in the Graeco-Roman period, an ensuing dryness may have been the cause of starting the Huns on their migration into the Ukraine and central Europe. The pressures that sent those Asiatic hordes westward are not clear, as the threads of history are broken, but it is well known that those barbarians became, under Attila, the greatest scourge that ever fell on western man.

Most historical writing has recorded the lives and needs of rulers and warriors. Economic history would take into account the natural forces that gave rise to peoples and nations. It would make plain the gains and losses, and balance, of the world. It would show how whole populations grow strong because of the favorable aspects of nature. There has been a wide awakening to the value of this economic viewpoint. Particularly in the United States it has become

thoroughly understood that military conquests, such as marked the political annals of olden times, are futile, costly and even destructive to the victor. And this country, therefore, has become devoted to a program of peace, fostering it by an effort to improve world agriculture and in giving technical assistance to other peoples.

The limiting factor in this new approach to international relations, designed to help other countries to help themselves, is the hard fact that every country does not have the good soil and the good climate that would enable it to establish a good standard of life. In the book of economics a good climate is fundamental to the affairs of men. And any trend that would suggest a shift in world climate is sure to be closely watched, for it would affect everyone, and every industry, particularly agriculture with all its husbandry of crops and animals.

Forty years ago, Professor Krum of Cornell University was trying to persuade farmers to hatch broilers earlier, but not in January or February. In those days New York State was frozen up and snowed in for a protracted period of at least six weeks every winter. One evening this summer, at a meeting in central New York, one speaker told a group of poultrymen that "New York is ideal for starting chicks any week in the year" and offers a big advantage in obtaining growth over "the heat plagued broiler business in the South." Maine, which used to be the classical center of the "severe New England winters," produced 87,582,000 pounds of broilers in 1952.

Maine's broiler industry radiates out from Belfast, at the mouth of the Penobscot river. Up that river at Old Town, Maine, the frozen ice of winter had provided the natives with a natural bridge, heavy enough to carry all their loads, but in 1948 that ice began a new order of things, going out in a sudden January thaw. At Boothbay Harbor, Maine, the January average of the ocean water has increased from 33.3 degrees of temperature in 1906, to 35.2 degrees. Off New Haven, Conn., in Long Island Sound, there has been an increase of 2.4 degrees Fahrenheit in the January temperature of the water since 1874; and at Woods Hole, Mass., an increase of approximately 2 degrees.

Lobsters are moving up the coast. Codfish are being caught in large volume off the shores of Greenland, and are now the chief diet of the Eskimos, although they never saw a cod-

fish up to 50 years ago. The polar icecap is retreating, and as the two-mile-thick glacier ice that covers most of the valleys and mountains of Greenland recedes, relics of old farm houses and graveyards are being uncovered. The orsemen had established a colony in Greenland in 986 A. D., but all communication with Europe ceased about 1400 A. D. Cold was again descending upon the world.

It is impossible to make a close comparison between the present and medieval times. Detailed temperature recordings do not go back that far. Gabriel Fahrenheit, the Amsterdam instrument maker, did not introduce the mercurial thermometer until 1714. Whether the trend toward a moderate rise in the average temperature will be of long duration, or is already at its peak, is a question that may be answered quickly by science-fiction, but the facts will only be established by the lapse of a good deal of time.

Save Farm Pond Cost With Own Labor

You can save much of the cost of building a pond on your farm if you can do some of the preliminary work yourself.

One of the preliminary jobs is staking out the location, says Ralph C. Hay, Illinois agricultural engineer. Others include digging the core trench across the valley where the dam is to be built, backfilling it with clay, laying a pipe for stock water supply and placing concrete and pipe or tile for the spillway.

When you look for a site for your farm pond, pick a relatively large basin area that can be dammed with the least possible earth moving. Your pond will also need a subsoil that is watertight and a watershed where you are controlling erosion. The watershed should preferably be in pasture.

You'll need a watershed large enough to make it possible for runoff water to fill the pond. But a more frequent error, Hay says, is to have the watershed too large. That requires a costly mechanical spillway and makes it hard to use good land use practices and control erosion.

A good ratio is 3 to 5 acres of watershed for each acre foot of water storage capacity. Occasionally you will be able to find a location where a spring or tile flow can be caught in the pond. One other essential is to fence the area to keep out livestock, Hay says.

University of Illinois

HOW CAN 'CONSERVATION' BE BROUGHT TO MORE FARMS?

Politics or Education

Read this "open letter" to a State Conservationist for a better understanding of the Soil Conservation Service controversy . . .

G. B. Gunlogson, Racine, Wisconsin

Dear Wisconsin Conservationist:

A RECENT issue of the *Racine Journal Times* quotes you as saying, "Only about 12 farmers in Racine County have adopted the conservation program of strip planting, rotation of crops and contour planting, although 26,000 farmers in the State have increased production from 50 to 300 per cent through the plan."

The 26,000 farmers you refer to are roughly 15½ per cent of the number in the State. Does this represent the number of farmers that are currently using the "plan" or is this the total number of farmers that have signed up since the beginning of the program some 15 years ago? My observation is that substantial numbers of farmers who signed up have for one reason or another failed to follow the plan or have abandoned it.

At the outset I should explain that I have long been impressed with many of the features of the soil conservation program, but I am also quite critical of some of its methods and particularly of the political system which would appropriate "conservation" as its exclusive perogative.

Obviously, good results accrue from all conservation practices, whoever applies them. Strip cropping, contour plowing and sometimes terracing have a definite place in sloping fields. Crop rotation has been one of the basic practices in good soil management for a hundred years but good rotation must be keyed to the whole farm program.

Against 'Package Plan'

The question is not whether these practices are beneficial but whether it is in the best interest of soil conservation to as-

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semble a few practices into a package to offer farmers as a "special" deal from the Federal Government. What is there in this plan of practices that a good farmer cannot employ without signing up for the package? Thousands of farmers in this State are doing exactly that.

What is there in this plan that the county agent and extension specialists can't understand or can't advise farmers on, equally as well as the SCS-Soil Conservation District set-up?

What is unique about this plan, to require this exclusive alliance between a Federal agency and special political set-ups?

Many Factors Involved

Actually, most of the 168,000 farms in the State would show an increase of 50 to 300 per cent or more during the last fifteen years or so. Wisconsin oats production alone is up nearly 100 per cent due partly to improved cultural practices, but primarily to the adoption of superior varieties such as the Vicland oats produced by the Wisconsin experiment station.

Likewise, corn production is about 50 per cent higher; potato yields in the State are up something like 150 per cent; animal production is up substantially, due to better livestock management including both breeding and feeding.

The factors contributing to increased production as well as to better soil management are almost endless. Modern machinery and power have become one of the greatest factors in this progress. Plant specialists are constantly improving varieties. Some crops have been almost tailor-made to suit soils and climates, and this includes soil-building legumes as well as grasses and other plants. The application of chemistry in agriculture is coming so fast that no one can even visualize the potentials.

Despite all these technical advances, the most important element of all is still the farmer himself. The institution most experienced in advising farmers and working with them is the Extension Service. The reason this service has not accomplished more in recent years has been shortage of men and political obstacles.

Federal appropriation for the Extension Service now is about the same as fifteen years ago, on a basis of parity dollars, while ever-increasing millions go to a highly overlapping agency.

Many years ago the Land Grant College System, including Experiment Stations and the Extension Service, was established to serve agriculture in research and in agricultural ed-

ucation, residential as well as as on the farm. There have been many changes in this system and no doubt they will continue in order to meet the ever-changing requirements of agriculture.

Should Be Under Extension

There are many reasons for believing that all of the good features of the Soil Conservation Service at the farmer level could be handled better and more economically if placed within the framework of the Agricultural College System.

Already the research has been made cooperative with the Experiment Stations. The field men, if transferred to the Extension Service, would have a better opportunity to integrate all good soil conservation practices into a broader and more practical service to farmers. They would no longer have to duplicate or arrogate functions of the county agent and the Extension Service.

Most of the SCS technicians have obtained their education in these same Agricultural Colleges and they have to draw on the Agricultural College System for the main body of the practices that go into this "Plan."

Such a realignment in these services would make soil conservation more effective. It would provide better supervision and coordination at the farm level, and it would minimize politics and make-work.

Under this system the technicians could contribute to soil conservation on most of the 168,000 farms in the State instead of only 15 per cent.

The present SCS-Soil Conservation District alliance is a political outgrowth of demonstrations undertaken on many farms about twenty years ago by the Soil Erosion Service. The work was done with the help of CCC and WPA labor, and also supplied were the materials and mechanical equipment. These demonstrations proved valuable in many areas in this state and elsewhere.

While thousands of fields had been terraced, contour-farmed, reforested, etc., long before this, these practices had never before been applied so dramatically. With the organizing and promotional abilities of Hugh Bennett, they attained new importance in agriculture.

How SCS Was Started

The pictures and publicity that followed these demonstrations provided the administration with a dramatic political opportunity, and in due time the Standard Soil Conservation Law was evolved. In those days, every act of Government was made under the aegis of "emer-

gency". Another consideration which seemed important in federal planning was the by-passing, so far as possible, of all established state and local institutions.

In 1937 the President wrote the Governors of Wisconsin and of every other state urging quick action on this legislation. Most of the states promptly complied.

Accordingly, the Soil Conservation Districts were formed. They were not only provided with a direct federal wherewithal but in many states were given compulsory powers—a weapon which, they like to explain, has not been used.

This completed the alliance and working arrangement between SCS and these local political subdivisions. Immediately conflict with other agencies was set in motion.

Battle with PMA

The struggle between this setup and PMA has been waged at all political levels and "conservation" has been the battle cry, despite the fact that one is essentially educational, the other economic.

The political influence of this Soil Conservation District setup and its overriding bureaucracy, the National Association of Soil Conservation Districts, has become so powerful and presumptious that complete inquiry into all the ramifications should be made.

I believe the supervisors of the local district organizations generally have become unwittingly embroiled in this system of power politics.

I think the same is true of many of the SCS employees; in fact, I doubt if Mr. Salter, in the rather short time since he took charge of SCS, realizes the complexity of the situation.

Soil erosion, floods, unwise land use and poor cultural practices are still widely prevalent. Our progress in meeting these problems and in promoting individual responsibility will depend largely on the techniques, methods and philosophies that are brought to bear on them at this time.

Many studies show that a certain percentage of farmers is slow in adopting new or better practices. The farmer is no different from the business man or anyone else. He will accept those methods and practices which he thinks are beneficial to his enterprise and to the general welfare. Naturally his self-interest comes first. The process is essentially one of education. The alternative would be some form of compulsion.

SCS as a 'Bureau'

SCS can continue to be of great help. Its service should

be furnished just as freely and with the same cooperative spirit as are the services of the Bureau of Animal Husbandry or the Bureau of Plant Industry, Soils, and Agricultural Engineering.

It should not have to employ a long arm with a paw on the end whereby to offer its service. Too many of the proponents of this alliance regard farmers, agricultural workers and others who are not on their band wagon as uninformed or selfish.

Why should this political alliance claim priority on land-capability studies and plans, a practice which many good farmers followed long before there was SCS? Why should the extension of this be offered exclusively to so-called cooperators of a special political setup?

FARMERS SHOULD BE 'FREE'

Farmers should be free to cooperate and to organize, as they have a thousand times in the past, for livestock improvement, seed improvement, soil improvement, for drainage or for conservation purposes. Run-off is one phase of conservation that goes beyond farm boundaries. It often calls for cooperation and organization on watershed basis.

The pattern for such organizations has been well established. There is no need of a Federal finger in the middle of the pie.

Right here in Racine County we saw political hands at work when the County Board recently authorized formation of a Soil Conservation District. Among actual, producing farmers there was at most only a luke-warm acquiescence. It had been turned down at least once before. Bluntly stated, it was pushed through, aided by pressure from interests which have no direct connection with agriculture.

In the interest of sound conservation and fairness in the political affairs of farmers, I believe that you and others active in conservation might well encourage a thorough study of the whole matter, including a realistic appraisal of the methods and accomplishments of all Federal agencies whose work relates to conservation—*G. B. Gunlogson, Racine, Wisconsin.*

Disease is the greatest single hazard in profitable livestock production. The annual national livestock death loss directly attributed to diseases has been conservatively estimated to be 15 per cent of the swine, 20 per cent of the sheep and lambs, and 10 per cent of the cattle and calf population. Sanitation is an important fundamental step in disease control.

THREE WAYS TO DRY HAY

Agricultural engineers describe wagon, batch and mow hay driers . . .

Condensed from New Jersey Agriculture

RAIN causes farmers to lose about 4 per cent of their hay crop each year.

Fortunately, three methods of drying hay can help farmers prevent this loss.

In a 5-year study at Rutgers, Mark E. Singley and Bruce R. Poulton found that heated air could be used to dry a batch or wagon load of hay at an operating cost of approximately $5 a ton. It is well worth the cost, considering the fact that rain-damaged hay usually sells up to $25 less a ton than high quality hay.

The batch or wagon drier method enables a farmer to cut his crop and cure it at the proper stage of maturity, regardless of threatening rain. In other words, he can make some high-quality hay almost every day. The batch or wagon drier method divorces the farmer from his dependence on sun drying and eliminates the inconveniences of drying large quantities of hay in the mow.

The specialists had long realized that the heavy, wet bales, turned out by balers in general use, caused a problem in loading mow driers. The answer, then, was a batch or wagon drier that could be used to dry comparatively larger quantities more conveniently. Heated air is required to keep the operation progressing and to insure a good job.

Singley and Poulton point out one important difference between a batch and wagon drier. It concerns labor needed to handle the bales in the field and until they are stored. When a batch drier is used, bales are handled four times. They are loaded onto the wagon, hauled to the batch drier, and removed. After the bales are dry, they are loaded onto the wagon and taken to the barn to be placed in the loft. If a wagon drier is used, bales are handled only twice.

One batch-type drier studied was a pole-type shed. The plat-

form was 60 feet long and 16 feet wide, with a 3- by 4-foot air duct. Each batch included 430 50-pound bales stacked two-deep, making 10 tons. Fuel required to dry each batch of hay containing 40 per cent moisture ranged from 120 to 140 gallons of oil.

The approximate cost of this batch drier, including materials and labor, totaled about $3,000. The cost of the heating unit was approximately $2,000, and the cost of the fuel ran about 14 cents a gallon. Approximately 200 tons of hay were made on this drier in 1951.

The size of one of the wagon driers was 8 feet by 16 feet, with a 3- by 1-foot air duct. Such wagons hold 125 bales when they are stacked five-deep, and three wagon loads of hay can be dried at the same time. A two-burner heating unit was used to dry hay baled at 40 per cent moisture content. More than 400 tons of hay were made on this drier during 1952. The specialists add that a wagon constructed for wagon drying costs approximately $500.

One point to remember about wagon drying is that a wagon will hold about 2 tons of dry hay, making this method too costly for drying large quantities of hay at one time.

Batch and wagon drying are new, and there is still much to be learned about both. A new hay dryer is being erected at the New Jersey Dairy Research Farm so Singley and Poulton can enlarge upon their studies. They are far enough along, however, to advise interested farmers to consider batch or wagon drying only if they make more than 100 tons of hay a year. Farmers who make less hay should investigate the less expensive mow drier.

This third type of drying usually involves less cost because the drier is built into a farmer's hay mow, eliminating the need for a new building. Heated air is not usually used with mow driers because of the fire hazard. Instead, farmers depend on natural air circulated by a fan to do the drying job. Baled, long, or chopped hay can be dried successfully in the mow. Hay should be put in at not over 45 per cent moisture content, and 25 cubic feet of air per minute must be supplied for each square foot of drying floor space.

A 30- by 50-foot mow dryer with a dry hay capacity of 60 tons can be constructed at a cost of $400 to $500. Additional costs are the required fan, motor, and motor starter. This

cost is dependent on the type of electrical service available. Gasoline engines are not recommended since they are sometimes unreliable.

Both Singley and Poulton feel that in general the most important aspect of hay drying is the manner in which the drier is managed. Bales must be packed tightly on the drier. Don't allow any spaces between bales and make sure no bales overhang the edges. Taper the stack neatly from floor to ceiling.

How To Make Old Apple Trees Younger

A new pruning system—devised to produce larger apples—will also take years off the life of an old apple tree, according to University of Wisconsin Horticulturist R. H. Roberts. Roberts described a plan that can revive thousands of apple trees in this country.

Orchards all across the country are getting old, especially since they have not been replaced by new plantings in recent years. With age, the trees are less vigorous. The per cent of small, poorly salable apples is consequently much greater.

In the past, Roberts said, apple growers have cut out the old weak wood at pruning time. His new plan would save this old wood around the lower part of the tree and renew it. He simply cuts the old weak growth "in half" during the dormant season. Each old branch then sends out a strong new growth and bears large fruit.

The horticulturist told of another benefit from the new pruning method. Trees can now be heavily topped and kept shorter. This makes easier spraying and picking. Apple trees are ordinarily allowed to grow tall to produce the vigorous top limbs which bear large apples. The new pruning system induces large fruits on the older lower limbs and makes tall trees unnecessary.

The pruning method itself is fairly expensive with about an hour and a half labor needed per 20 year old tree. But when you compare this cost to the cost of picking and handling large percentages of little, unsalable apples then you see the pruning cost is recovered at harvest time, he said.

Roberts says the pruning method has been tried with success on several varieties, especially the spur-bearing, biennial kinds of Delicious, Dudley, Golden Delicious, Jonathan, Northwestern Greening and Wealthy. *Wisconsin Extension*

Bigger Sugar Trees Pay Bigger

Read these results of tests comparing fewer large trees against more small trees . . .

Condensed from New England Homestead

James E. Lawrence

MAPLE sirup producers have long known that big trees with large crowns yield more and sweeter sap than small trees with small crowns. But because large trees mean fewer trees per acre, many producers have questioned the saving, if any, from larger, fuller-crowned trees. Producers have also wondered what influence larger trees would have on sirup yields per acre and how bigger trees would affect production costs.

To answer these questions and to determine specific relationships between tree sizes, research foresters from the New York State College of Forestry recently conducted a study of sugar bushes in Lewis County. The results show that producers can expect greater sirup profits from sugar groves of large trees with large crowns.

Thirty-five sugar bushes were selected for the study from the 250 sirup-producing farms in the county. Attempts were made to obtain as uniform a sample as possible, because of differences in sugaring practices, amount of exposure to sunlight, and soil types throughout the area. Sugar bushes examined were on farms within a 16-mile radius, at an average elevation of 1,000 feet above sea level. All trees were tapped the same week, during a season which lasted a month. The number of buckets hung per tree on the different farms corresponded with the recommended practices for the various tree sizes in the region.

Small trees were considered those which averaged 14 inches in diameter at breast height. The average crown diameter of these trees was 18 feet. Large trees were those which averaged 21 inches diameter; crown diameter averaged 28 feet. The significant production differences between the small and large tree sizes covered these five essential points.

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1. Although trees with 28 feet crown diameters took up two and three-quarters as much space as trees with 18 feet crown diameters, they produced two and three-quarters times as much sirup. Therefore, no loss of sirup production per acre was found where big trees with large crowns composed the sugar bush.

2. Increased production of sirup from large trees results from additional sap flow and a higher percentage of sugar.

3. More sap per bucket and the increased sugar percentages in the sap mean a reduction of some labor costs and many fixed equipment costs. This amounts to an increase in sirup production for the same labor and materials previously used on small trees.

4. Sirup production costs from trees with 18 foot crowns were 70 cents a gallon more than production from trees with 28 foot crowns.

5. The 70 cents a gallon saving from big trees over small trees is made at the expense of additional thinning costs and low lumber production of trees with large branches near the ground.

The research foresters point out that where the wood is used to boil sap, the additional thinning cost is extremely small as compared with the return. They admit, however, that the price of maple logs will have to rise considerably before it will pay farmers to try to grow logs along with sirup in areas suited for sirup production.

The foresters further point out that although large trees with large crowns will give greater profits, a rapid increase in production may not be expected by thinning old, non-vigorous sugar bushes. Further, in middle-aged, vigorous sugar bushes a thinning will not necessarily result in deeper crowns, although it will result in wider crowns.

To ensure deep and wide crowns, recommend the experts, thinnings should be started early, at least before the trees are over 4 inches in diameter. Moreover, the thinnings should be heavy and often enough to prevent crowns from touching each other until maturity. The foresters also advise that when planting new sugar bushes or improving old ones it is best to concentrate on areas near the sap house and good roads, leaving the more inaccessible trees for timber purposes. But in any event, managing the sugar bush for bigger trees with larger crowns will mean cheaper sirup production and higher profits for the producer.

Premium Prices for Eggs

New emphasis on quality bring opportunities for higher prices . . .

Condensed from The Missouri Farmer

Richard Collins

LAST fall Helen Prussing, of Springfield, Missouri, marketed Grade A large eggs for as high as 18 cents per dozen over unclassified prices. At the same time Gladys Blackwell, Dent County flock owner, was getting 24 cents per dozen over the unclassified price for her eggs. Miss Prussing sold on a graded market. Miss Blackwell shipped to a hatchery.

If you're serious about the egg business, this problem of how to market is of utmost importance to you. Two recent developments, the emphasis on quality for the consumer egg and the rapid growth of the broiler industry, are becoming significant in the egg marketing picture.

Both of these programs offer a premium to the producer which should carry a lot of weight with the flock owner who is willing to take care of his eggs.

Let's look at Gladys Blackwell's operations. Why does she market to a hatchery? There are two reasons, she says. First, she believes this makes her the most money—last year she netted about two dollars per hen during not too profitable a poultry season in general. The hatchery couldn't take all the eggs she produced or her profits would have been greater.

"Then too, I have really built up production in my flock," Miss Blackwell points out. For her replacement pullets she has eggs set from her own New Hampshire hens. Her last year's record of 225 eggs per hen really backs up this statement, especially when you consider she is producing a meat type chick.

Helen Prussing sells on a quality program because of the additional premium offered. This varied from an 18 cent high last November to about three cents in February. By June it had worked up to about six cents. That's the difference

Reprinted by permisson from The Missouri Farmer, Columbia, Mo.

between unclassified prices and the price she received for Grade A large eggs. Miss Prussing shipped about 70 per cent Grade A large throughout this period.

Miss Prussing has sold both hatching and quality eggs. "Compared to selling to a hatchery, with a quality flock you don't have the roosters to feed, and you have a lighter breed of hens, so I think it takes less feed to produce a dozen eggs," Miss Prussing reasons. And that's the big reason she switched to marketing on a graded program.

Egg care is an important practice in both of these operations. Both markets want a "good" egg. Miss Prussing and Miss Blackwell follow similar production practices. Both gather eggs in a wire basket several times daily, cooling them in a cellar. Eggs that will clean up are buffed with sandpaper. Cracked and dirty eggs are not cased. Shipments are made twice per week.

Litter mangement is important in the production of clean eggs. A built-up litter of shavings is used for both these flocks. Miss Blackwell mixes in a little lime if the litter becomes damp. Hens are confined to the laying house.

To hold up production both Miss Prussing and Miss Blackwell feed wet mash and pellets at specific times throughout the day, in addition to the laying mash kept in the feeders at all times. Oats in the morning and corn at night are fed on the litter, also. Lights are used on these flocks to give the hens about a 16-hour day.

So you can see there is little difference in flock management.

A big factor to consider when you make a choice of markets, is what is available in your locality. It does take more feed to produce hatching eggs. Outside of that, the main difference between a hatching or quality egg operation is the amount of the premium and the length of time it is paid.

Generally this premium on graded eggs is good through the summer, fall and early winter. A figure commonly used is that on year around total production the poultryman marketing quality eggs can realize an additional five cents per dozen. The number of eggs which grade out of a case of course effects this average premium. Unless proper care is given to the eggs, there is little extra profit in selling on a graded program.

In hatching egg production the premium is high. But here the length of the marketing

season is the draw-back. There are few hatcheries which guarantee a year around market. Most of them take eggs when they need them. Their need depends on the demand for broiler chicks, and to some extent on the seasonality of egg production.

* * *

Each person's "share" of land in the U.S. is 2½ acres of crop land, 7 acres of pasture land, and 2¾ acres of non-agricultural land—a total of 12 acres per person for the 157,000,000 people living in the U.S.

* * *

In the summer broiler placements are low, but it is also the season of low egg production. So, most broiler hatcheries take all the eggs their flock owners can produce. In the spring many eggs produced for broiler hatcheries may wind up as "unclassified." Some flock owners selling to a hatchery start their pullets in the fall in order to fit their production season more to this demand.

With the heavy breeds demanded by broiler hatcheries more floor space is required. Some flock owners find the testing and culling program required by the hatchery a disadvantage also. Miss Blackwell doesn't figure this of much importance, however. Her hatchery tests when the birds are in about ten per cent production. This doesn't disturb the birds, according to her.

Rigid culling for production and health of the hens is necessary in both types of operation. But some hatcheries also cull for color, and other inherited characteristics. Hatching eggs must be of uniform size—around 23 ounces per dozen. In Miss Blackwell's case, she sorts out white, rough, or large eggs as they are cased.

Which market is the most profitable? Before you decide, shop around. Find out what kind of a quality market exists in your community, what sort of agreement is available through a hatchery. Then you can make a decision, remembering that if you choose hatching egg production you'll be handling a heavier breed. Generally these hens, bred for meat type, will lay fewer eggs than the production bred strains. Figuring in the roosters, it will take more feed and more house for the hatchery flock.

The factor you'll want to weigh against all this will be the premium which the hatchery is willing to pay and the length of time it can be expected, as compared to what a quality market has been offering.

U. S. Agricultural Scientists in Israel Find

Ancient Irrigation Systems Still Usable

. . . uncover old ways of storing water in soil, making dew, and growing crops in the desert.

Condensed from a United Nations Report

ANCIENT irrigation systems in Israel can be copied with good results today and, in some cases, can even be put back into use after cleaning and repair, experts of the Food and Agriculture Organization have reported.

Dr. W. C. Lowdermilk, soil scientist from Berkeley, California, and Wayne Miles of Dallas, Texas, have told how modern bulldozers are being used in restoration of 2,000-year-old cisterns in a project conducted under the expanded program of technical assistance of the United Nations and the specialized agencies.

Reporting on an exploration of the Southern Negev, beyond Beersheba, Dr. Lowdermilk said that the Nabataeans, whose Golden Age was from 200 B.C. to 200 A.D. and whose capital was Petra, were able to conserve flash flood waters in these regions of low annual rainfall. Their methods were continued under Byzantine rule up to the time of the Islamic invasions in the 7th century.

He wrote: "Thousands of cisterns for storing rainwater had been dug in the chalky limestone of the lower slopes of the hills. Small open ditches were dug to lead storm run-off of these slopes into the small cistern mouth that opened into a jug-like receptacle underground. These cisterns may be located from considerable distances by the whitish pile of spoil from excavations.

"Much larger cisterns were dug into the chalky cliffs along the larger wadies. The cistern was dug to depths well below the floor of the wadi channel but the opening was cut about 1.0-1.5 meters above so that the cisterns would not be filled with gravel and silt.

"Such cisterns may have capacities of 25,000 to 70,000 cubic feet. Where needed, columns of chalk were left to support roofs of the excavations."

Water is desperately needed

in this desert area now, Dr. Lowdermilk points out. Wells are out of the question either because the ground water is saline or because its level is too far down.

In an effort to utilize the ancient system, Mr. Miles, of the FAO Soil Conservation Team, hit upon a plan for filling the cisterns after they had been cleaned out. With a bulldozer he built an earth embankment across the wadi channel just downstream from the cliff-openings into two cisterns. The crude earth dam had no spillway, for it was expected to break when overtopped. The plan worked. The two cisterns were filled with storm waters; the earth-filled dam broke; and the rush of impounded waters swept it away, keeping the bottom of the wadi channel at its former level.

Dr. Lowdermilk wrote FAO that the filling of the cisterns by the use of a bulldozer for five hours saved water haulage by truck over a distance of 200 kilometers.

He reported that the Nabataeans had also learned to store rainwater in soil. "These ancient experts in desert water supplies had learned some basic facts about soil moisture relations," he wrote. These relations involve complicated calculations of capacity of soil to absorb water, evaporation loss, amount of water necessary to grow crops, depth of soil needed to store necessary water, and soil embankment heights necessary for each basin into which water is diverted.

"The Nabataeans," according to Dr. Lowdermilk, "had not only discovered these basic relations. They made use of them. Moreover, the method must have been successful, for these practices of diversion of flood waters of wadies were carried on for centuries." He adds that the accepted view now is that no important change has taken place in the climate of the region since Roman times. The obvious inference is that Nabataean methods would even now produce Nabataean results.

Dr. Lowdermilk reported: "In our inspection we found that much of the recent works of diversions had failed for want of adequate data and design. There is much yet to learn from the Nabataeans and their successors in making use of flash flood waters."

Another interesting man-made phenomenon in the fantastic landscape of the Negev, FAO experts report, are thousands and thousands of regularly

spaced mounds of flint fragments.

It is generally thought that they were dew mounds in which the Nabataeans collected dew to water a grapevine or olive tree planted in the center of each mound. The Bible, FAO points out, gives some support to this hypothesis when it praises God as One who "turned the rock into a standing water, the flint into a fountain of waters" or again, tells how the people of Israel were enabled by the Lord to "suck oil out of the flinty rock."

Dust and sand now block the spaces between the flint fragment so that the wind cannot blow through to condense moisture on the stone surfaces within the mounds. The FAO Soil Conservation Team has recommended that some mounds be rebuilt and the hypothesis tested. If it works—and it is thought it will work—vines and olive trees could be grown in the Negev for the first time since the 7th century A.D., or even longer ago.

The study of the remains of antiquity in the Negev led the FAO soil conservation experts to make three specific recommendations.

First, they recommended that dew mounds be constructed and tested. Second, they said: "The methods of the ancients in diverting flood waters to store rain waters in soils can be done again, and even more efficiently with powered machines. . . Forage crops of native grasses and hardy alfalfas may then be grown either for pasture or for hay. . . It was our recommendation that the ancient works be more closely studied to discover grades of ditches, the methods of diversions, and methods of constructing loose rock walls and sills. Of course, if concrete construction could be justified, much better effects may be had than in ancient times." Third, they recommended a practical demonstration of how the great old cisterns along the wadies could be filled during the flash flood season to provide water for crops, herds and people throughout the year.

FAO experts in other Middle Eastern countries have also described the value of ancient irrigation systems in reports to the agency's headquarters in Rome.

These countries, they point out, were once covered with fields of grain, vineyards, orchards and olive groves. In the days of the Roman Empire their agricultural surpluses helped feed Rome and Byzantium.

Now, through studying the remains of the irrigation systems, FAO experts are becoming convinced that the ancient Persians, Carthaginians, Jews and others have left an immensely valuable technical heritage to their successors on the land.

FAO technical assistance experts go into countries all over the world with an open mind, the agency observes, so that they may best help countries develop along lines best suited to their conditions. Sometimes the expert will advise a great modern installation like a hydroelectric plant, but quite often he finds that a small modification of traditional local equipment will increase agricultural production many-fold, whereas introduction of more modern equipment, in itself more efficient, would upset the agricultural balance and in the long run do more harm than good. For example, tests of various types of plows showed that it was better to use the primitive, traditional plow than a modern European or American one in the dry steppes of northern Iran, FAO recalls.

A surprise discovery at the Earhart Plant Research Laboratory of the California Institute of Technology offers startling new hope for the cultivation of food plants in the dry and semi-arid zones of the earth. Every farmer and gardener knows that plants absorb moisture from the soil through their roots and evaporate it from their leaves (a process known to plant scientists as "transpiration"). But when a plant has wilted from lack of soil moisture, this process may be reversed. Dew forming on the leaves is absorbed, fills the stem and the roots, and is even excreted by the roots into the surrounding soil to be held in reserve there until the plant needs it.

This hitherto unsuspected method of absorbing and using water from the cool night air and from the occasional mists that are not uncommon in dry areas was observed in a research, sponsored and partly financed by UNESCO, under the direction of a Netherlands-born plant physiologist, Professor F. W. Went. He was assisted by Mr. S. Duvdevani, a citizen of Israel. The work was reported at the meeting of UNESCO's Advisory Committee on Arid Zone Research in Paris.

Five varieties of plants were studied: tomatoes, sugar beets, peas, squash and mint. The value of dew during dry periods or in dry areas, according to Dr. Went, was first revealed by the

fact that plants recovered from wilting even faster when dew was sprayed on their leaves at night than when the soil was watered. They took in enough water from dew so that they functioned normally during the succeeding day without any watering of the soil. But what,

* * *

Investments in conservation practices have returned an average of between 12 and 30 per cent in the last 10 years, says a University of Illinois farm economist.

* * *

in Dr. Went's own words, was "really exciting and unsuspected" was that the large amount of water absorbed from dew can be excreted into the soil through the roots and can be stored there without loss by evaporation for use by the plant during the dry day ahead. The amount of water thus put into underground storage by the plant is measured in milliliters even in the case of small plants and occasionally equals the entire weight of the plant itself.

These studies, he reported, indicate that dew is a major resource of many dry areas and that the mere choice of those varieties of food plants that are best able to utilize dew may lead to a marked increase of arid-zone vegetation and food production. Dr. Went and Mr. Duvdevani are now investigating the relative effectiveness of different varieties of plants in the transportation of dew to their roots and the soil.

Meanwhile they have recommended to UNESCO's Advisory Committee on Arid Zone Research that a really intensive survey be made of the frequency and amount of dew in all semi-arid regions of the world in order to make immediate use of the newly discovered watering process in the areas that have an adequate distribution of dew.

—United Nations (UNESCO)

'Hen of The Year'—The honor of owning "the hen of the year" for 1953 goes to R. A. Cashman, Webster, Ky. One of his White Leghorns laid 339 eggs in 350 days. Her eggs had size and high quality. She also had breed characteristics, health, vitality and other features that won the nation's top poultry honors at a meeting of the Northeastern Poultry Council at Syracuse, N. Y. Mr. Cashman also had the highest-laying pen of 13 pullets in an 11-state egg-laying contest. His birds laid an average of 293 eggs in 350 days.

How to Run a CALF FACTORY

Will this idea mushroom as pig hatcheries did awhile ago?

Condensed from Farm Journal

Bob Fowler

AT Southern California's River Ranch, every animal is raised with but one thought in mind—to see it placed in another dairyman's milking string. All must go before they freshen, for River Ranch is just not geared to milk a cow.

Within the past 12 months, they have handled 3,000 Holstein heifer calves. And because there are no cows and no time to milk them, calves are nursed on re-constituted powdered whole and skim milk. It's cheaper. Faster, too.

River Ranch calf specialists bear down on the 60 days of an animal's life between birth and weaning.

"We're shooting for a Holstein heifer that weighs 185 to 200 pounds at 60 days," says ranch manager E. P. Cornecl, "and the ones that we keep until they are springers, we expect to breed at 16 or 17 months as 900-pound heifers."

The Los Angeles dairy cow market wants size. So River Ranch, in a new, highly specialized business, aims to turn out big heifers.

HERE'S HOW THIS CALF RAISING SYSTEM WORKS:

Calves arrive by truck. Four times a week, two-day-old—or younger—animals are picked up along a 125-mile circuit in Los Angeles and Riverside Counties. Just the one breed, Holstein, is

Reprinted by permission from the Farm Journal, Philadelphia, Pa.

handled, and only calves sired artificially.

The calf route includes 50 farms. The truck driver stops where he sees a flag to signal him that a heifer calf has arrived. His truck, partitioned into four non-draft compartments, holds 25 animals.

The deal for the calf is made on the spot. And because each comes from a good sire, the calf owner gets a premium above market price. The truck driver, although he seldom sees the cow, looks for well-marked, fairly good-sized calves. He turns down those that weigh less than 75 pounds.

RIVER RANCH WANTS CALVES that come from cows that have been well managed. "The dairyman controls birth weight of the calves by the feeding job he does on his dry cows," Cornecl says.

Every calf is ear-tagged before it leaves a seller's farm, and the tag number is left. Thus, if a man wants to buy back his own calves—as some do—he can identify the animals if they are still on hand.

When the calf arrives at the ranch, it finds an individual 4' x 16' pen awaiting it in the starting barn. It remains there two weeks. Each pen floor is bedded over concrete with 4" of clean sawdust, and, of course, the pen has been thoroughly cleaned and disinfected.

Half of the 16' run is outdoors, where it serves as a sun porch. During bad weather, this section can be closed off by s l i d i n g in a plywood partition.

Is it smooth sailing with calves at River Ranch? Not on your life. They have all the calf-raising headaches found on other dairy farms, big or small. Scours is their big problem, too, and they don't have a sure cure.

But here's something: Dr. J. A. Howarth, University of California veterinarian, r e c o m mends a four-day program to whip a type of scours (Salmonella) picked up in long shipping, or around auction yards.

His plan calls for giving a half-gram chloromycetin pill every day for four days. Start as soon as the calf is home, whether he shows signs of scouring or not, Dr. Howarth says.

With his system, he lost only 7% in a bunch of affected calves, as against 40% in the untreated group.

DAY-BY-DAY CALF HANDLING at River Ranch goes like this:

They feed twice daily, setting the times as near 12 hours apart as possible.

"We have tried feeding three times, but I couldn't see that calves did any better, so we quit

it," explains Cornecl. "We don't push the little calves," he adds. "We try to keep them on the hungry side for the first two weeks, and we find there's less trouble with stomach disorders."

Milk comes from an electric stirring machine located in a central milk room. One pound of milk powder added to 10 pounds of 100-degree water is the simplest way you ever saw for a calf to milk a cow.

To feed, the River Ranch folks use half-gallon milk bottles fitted with rubber nipples. Each bottle is hung in a sheet metal hanger that Cornecl had built locally. It holds a filled bottle with nipple pointing downward, so that the calf must hold its head up to drink.

At one time they used calf buckets, but discarded them in favor of bottles and nipples, because the latter can be cleaned and handled faster. Nipples are sterilized each time they are used.

During the two weeks the calves are in the starting barn, milk is the only liquid they get. However, they do get salt and commercial calf starter at 10 days of age.

Once it's before them, calves will be eating solid feed within a week, says Cornecl.

AT TWO WEEKS, calves leave the starting barn for outdoor pens.

Here, for the first time, calves have access to unlimited water. They also get good alfalfa hay as well as free-choice calf starter. Of course, the twice-daily bottle feeding continues.

But as calves approach weaning, the percentage of whole milk in the ration is tapered off by increasing the amount of skim powder.

Directly following weaning at eight weeks, River Ranch puts a price tag on every calf. Some go to dairymen who make a business of raising weaners. Others stay. Those that do are bunched in lots of 40 or 50 and held in a corral.

Cornecl prefers not to put calves on pasture until they are at least five months old.

RAISING DAIRY HERD replacements is a brand-new business in California, and it fills a real need. In the past, for example, Los Angeles County alone has taken 5,000 cow replacements a month.

About half of them have come from outside California, some from as far distance as Minnesota and other Midwest states. Locally, few dairymen bothered to raise their own calves.

They argued that raw dairy land is worth as much as $3,000

an acre; so it didn't pay. Anyway, most dairy farms in the area are little more than a dry lot and milking parlor where they buy all hay and concentrates. Space for calves can be a problem. But it seems a shame to see calves from good cows go for veal.

Set-ups like River Ranch are seeing to it that some of the best heifer calves are saved to make good milk cows.

Varied Ratio Brings Best Gains in Cattle Tests

To put economical gains on fattening steers, it may pay to vary the proportion of concentrates to roughages fed at intervals throughout the feeding period. This was found true in feeding tests recently completed at the Colorado A & M College Experiment Station.

The tests, under the direction of W. E. Cornell, animal husbandman for the Experiment Station, were designed to study the effect of different levels of concentrates and roughages in fattening rations. Four lots of cattle were fed concentrate-roughage ratios which remained the same throughout the feeding period. The ratios were: 1:2, 1:1, 2:1, and 5:1. A fifth lot of steers received feed in which the ratio of concentrates to roughage was varied at four-week intervals during the feeding period. They were started on a 1:2 ratio, changed to 1:1 ratio at the end of four weeks, then to a 2:1 and finally a 3:1.

During the feeding period, cheapest gains were made by steers on the varying ratio of concentrate to roughage. Upon sale, the steers produced the highest yielding carcasses and graded choice. Connell found that steers fed the 3:1 ratio throughout the entire feeding period made the highest daily gains, but the gains were the most costly of experiment. Those fed at 2:1 ratio also made good gains at a slightly higher cost than those made by steers fed the varying ratio.

Steers on a 1:2 ratio produced the lowest gains at next to the highest cost in the experiment. Low gains also were made by steers on a 1:1 ratio feed.

Carcasses of all steers graded choice when sold, except two from the lot fed the 1:2 ratio which graded good. Rations used in the test were pre-mixed and full-fed to the steers. The feeding period varied from 192 to 213 days, being longest for steers fed the 1:2 ratio.

Colorado A & M

What Price RURAL FIRE PROTECTION?

Condensed from American Agriculturist

E. W. Foss

"Do you carry full fire insurance protection on all your buildings?"

"Do you realize that your farm pond has little or no value from a fire insurance rate standpoint in New York and many others of the Northeastern states?"

"Do you live in a fire protection district yet are over two or three miles from the fire station so do not obtain the preferred rate?"

THESE and other questions may bother you as a farmer or rural home owner.

For the past two years, the Agricultural Engineering Department at Cornell has been looking into some of these factors. A possible future program to reduce fire losses is presented briefly here.

The most obvious activity that will reduce our fire losses is to eliminate the causes of fires. It is possible to prevent most of our fires by correcting our fire hazards. Many studies have been made which prove beyond doubt that the lack of lightning rods, faulty chimneys, wet hay, improper use of wiring and electrical equipment, and just plain carelessness with fire, matches, etc., cause the majority of our fires.

On a statewide basis (in Iowa) fire losses have been cut in half by an inspection program that brought about the elimination or improvement of these and other fire hazards. WHO DID THE INSPECTION?—a trained man from the insurance company. If you were assured that your insurance costs would

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be reduced during the forthcoming years, and that your chances of having a fire would be reduced, wouldn't you welcome an inspection?

When we have done all that we can to eliminate the causes of fires, then it is our job to put out quickly those fires that do occur. Do you have a hose for your water system and an outlet on opposite sides of each major building? Do you have at least one 2½ gallon water type (class A) extinguisher in your stable and in the house—preferably near the cellar stairs? Do you also have a quart size carbon tetrachloride extinguisher (class B or C fires) in the garage or in the cab of your truck, and another one in your farm shop?

Do you have 3000 gallons of water where you or the firemen can readily obtain and use it—either from a stream, pond, or cistern? Remember this water isn't as useful if it is frozen over at times without a means of water withdrawal, is over 500 feet from the building group, or does not have an all weather road built to it.

Can your community fire department offer you the best kind of protection—if you should be so unfortunate as to have a fire? First, your community needs a fire company that has real leadership and trains frequently. If your state sponsors courses in fire training, the members of the company should be working on these courses. A heated fire house to store the trucks is almost another necessity.

Does your fire company have a truck carrying more than the usual booster tank load of water? This is another "*must.*" Up-to-the-minute companies are also tied in with other companies in a mutual-aid arrangement, possess two-way radio communications, have a card index of rural risks, and receive calls according to a code system worked out with zones and numbered houses.

Now let's suppose you have done all the preventative jobs outlined and have supported your local fire company to the extent that they are following the above practice—THEN WHAT? We might state here that if you are insured through stock or advance premium insurance companies, your premium rate in New York will be affected only if your neighbors are equally careful within a rather large area.

Because the mutual assessment companies are usually smaller and operate on more or less of a county area—careful neighborhoods will be reflected quicker in lowered rates. If

you are most careful and your neighbor is not—your rate will probably be just the same—IT'S NOT FAIR? No, we don't think so either—other areas believe there is a better way—that of classifying the rate according to the degree of risk.

How close are you to your fire company? If you are not within two or three miles (depends on class) the presence of the company means nothing, rate wise—yet you may be supporting it by taxes or volunteer help. Other areas credit up to 10 miles and many companies run distances longer than that. We believe the 2 to 3 mile rule should be changed.

New Test for Phosphorus

A reliable and rapid test for soil phosphorus that can be used on both acid and alkaline soils is announced by the U.S.D.A. and Colorado Experimental Station.

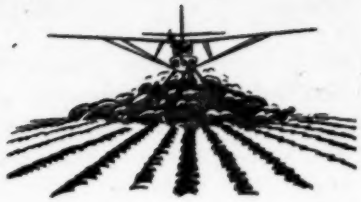
The test indicates—with greater accuracy than tests commonly used—where the addition of phosphate fertilizer will produce a response in increased crop yields. This is the first test to give a satisfactory measure of available phosphorus on the wide range of soil types in the western states.

The new method is based on relatively new knowledge of the reactions of calcium phosphates in the soil and the influence of these reactions on plant uptake of phosphorus. The test, which can be made in less than an hour, is readily adapted to the routine procedures of soil-testing laboratories. The measure of soil phosphorus available to plants is obtained by shaking the soil with a solution of ordinary baking soda (sodium bicarbonate).

During the past two years the researchers have used the new test to measure phosphorus fertility in more than 200 soils—ranging from strongly acid to alkaline—from various sections of the United States. Using radioactive phosphorus "uptake" as a measuring stick, they have found a close correlation between the amount of phosphorus taken up by the plant and the extent by which yields were increased.

Field results from the sodium bicarbonate test indicates that most soils showing a level of less than 50 pounds of phosphoric oxide per acre will respond with increased crop yields when phosphates are added. Generally, no response may be expected if levels are 50 pounds or more of phosphoric oxide per acre.

Spreading Superphosphate From the Air



New Zealand's aerial topdressing industry has made remarkable progress . . .

Condensed from Timaru Herald, New Zealand

LESS than four years ago, all topdressing of New Zealand's primary productive land was done, laboriously, by farm gangs on the ground. Today the truly mushroom industry of aerial topdressing is spreading 20 per cent of New Zealand's superphosphate production — and the percentage shows every indication of climbing still further.

Thus, an idea which originated among progressive farmers "down under" four years ago, has snowballed into an industry which employs 257 pilots, technicians, laborers, and clerks, and operates 160 of the 395 aircraft now in the New Zealand civil aviation register.

Hoppers installed in the Tiger Moth aircraft used for aerial topdressing in New Zealand take up to 5 cwt. of superphosphate. This is sufficient to enable the pilot to topdress between 20 and 30 acres of land an hour. Chief complaint of the operators against the Moth is its small payload. A larger payload would permit them to topdress more land with fewer landings and loadings.

There was considerable agitation among progressive leaders of the farming community before the orders went through for the Royal New Zealand Air Force to stage aerial topdressing trials at a selected area in the Wairarapa in 1949.

Air Force master tradesmen painstakingly installed a one-ton hopper in one of the R.N.Z.A.F.'s Grumman Avengers used during wartime in providing close support for ground forces. When the trials did take place, the practicability of aerial topdressing was clearly demonstrated.

In fact, the evenness of spread of the superphosphate from the

air was so good that it could not possibly be equalled from the ground. Later investigations showed, too, that the price was competitive with manual spreading, and the ease with which the aircraft could topdress remote, almost inaccessible hill country, could not be overlooked. At any rate there was general assent after the trials that aerial topdressing was an economic and practical proposition.

Far-reaching plans were made for Government aid in the provision of a topdressing service for farmers, and perhaps for R.N.Z.A.F. planes to help in providing it. However, a change of Government interfered.

Civilian operators were quick to seize their opportunity, and the first aerial topdressing companies were registered at Christchurch and Gisborne about the same time. Other companies formed thick and fast.

Besides their completely normal desire to make a comfortable living, the founders were mostly returned pilots from the Second World War, who had tasted, and enjoyed, the delights of flying. In it, too, they found the element of adventure they desired.

Significantly, none of the early companies formed have gone out of business. In September, 1949, they formed the New Zealand Aerial Work Operators' Association to protect and foster their interests.

Their first aircraft were mostly de Havilland 82's—the selfsame Tiger Moths which are still the backbone of the industry today. The operators bought them "dirt cheap" as war surplus aircraft, paying an average of about £250 ($700).~ Conversion work and the installation of a hopper in the front cockpit was done at extra cost.

Incidentally, the same machine today costs between £700 ($1960) and £800 ($2240), and the expense of conversion adds another £250 ($700) to the bill.

By trial and error, the operators developed a standard-type hopper which, with local variations, most suited New Zealand conditions. All these hoppers now have to be approved by the Civil Aviation Branch, which, throughout the inception and growth of this mushroom industry, has turned on it a fostering, paternal eye.

That first year of operation, the seven topdressing companies in business flew 2137 hours, dropping 5003 tons of superphosphate over 47,714 acres. The most rapid expansion occurred the following year, 1950-51. At its end the number of operators had swollen quickly

to 22. There was like expansion in their activities.

Their aircraft had flown 16,080 hours, and dropped 44,057 tons of superphosphate over 428,737 acres.

The progress was maintained this year. In the 12 months to March this year, the 38 operators flew 40,726 hours to drop 144,802 tons of fertilizer over 1,376,118 acres.

Other agricultural activities of the planes include dropping poisoned baits aimed at reducing New Zealand's rabbit menace, sowing seed from the air, and dropping supplies. In the 12 months to March this year, the "agricultural fleet" flew 4980 hours on poison-dropping missions. They dropped nearly three million pounds of bait. In addition they sowed a quarter-million pounds of seed from the air and flew about 500 hours in supply-dropping missions.

As aerial topdressing has expanded throughout the country, so has the network of farmers' airstrips from which the aircraft operate. Each airfield, built by the farmers themselves and normally bulldozed from a flat paddock, is between 350 and 600 yards long depending on prevailing conditions, height above sea level, and other factors such as hill clearance and surrounding obstructions.

Just as other newly-founded industries have experienced and are experiencing periods of labour shortage, so is the aerial topdressing industry. There is little doubt that the vocation of aerial topdressing demands pilots of a stable, responsible temperament. Those with previous single-engined experience have proved to be the most proficient pupils, but even though they may have completed hundreds of hours of single-engined flying during the war, the most expert realize they have a lot to learn before qualifying as proficient aerial topdressers.

Destruction Of Rabbits

In recent years South Canterbury aerial operators have played an increasingly important part in the improvement of district farmlands by dropping fertilizers from the air, and, particularly, in the destruction of one of New Zealand's greatest pests—the rabbit.

For a time, the distribution of phosphorised pollard pellets had the effect of eradicating large numbers of rabbits in the high country areas, and then an idea was born in the minds of a Timaru pilot and a farmer on whose property they were working. As the result of this idea and hard work during the last 18 months, country in many

parts of the Dominion where once hillsides and paddocks literally "moved" with rabbits is now entirely devoid of the pest.

What was this idea which had such far-reaching effects? Simply the laying of poisoned carrot from the air.

It was contended by the originators of the method that if rabbits would eat poisoned carrot laid in furrows by hand there was no known reason why they should not accept it in other forms. As far as could be ascertained this method of rabbit destruction had never previously been attempted anywhere in the world.

Pointers On Buying, Starting Feeder Lambs

Using good judgment when buying is the first step in making a profit on feeding lambs, says John Landers, Oregon animal husbandry specialist.

The ideal feeder lamb is short-legged with a smooth and compact body and short neck, the specialist reports. It should weigh from 60 to 80 pounds and can be native, western bred, white face or black face—as long as it's thrifty.

Landers doesn't recommend heavy-coarse lambs over 80 pounds or small, 40 to 50 pound, unthrifty looking animals. Lambs of 60 to 65 pounds are ideal.

When lambs arrive at the feeders' yards they need water, rest, and either a slow fill on feed such as grass hay, clover and brome mix, or to be turned into a pasture not too rich and green, the specialist states. Lambs should never be turned into a green field of alfalfa, he adds. If they are, there is a danger of scouring, bloating or even death.

Landers recommends a starting ration of a little whole oats or oats mixed with barley or shelled corn for lambs. Animals not accustomed to grain should be fed no more than one-fifth to one-fourth of a pound per head a day as a starter. In three or four weeks, they should reach full feed. Then a ration of 1½ to 2 pounds of grain, and an equal weight of hay, is recommended.

Alfalfa hay and barley have been the most efficient of all fattening rations, the specialist says. Lambs doing well will gain around one-third of a pound a day or 25 to 30 pounds in 75 to 100 days.

Oregon State College

Watering the Feed

SPEEDS UP MILKING

Condensed from The Michigan Farmer

ADDING water to the grain mixture may solve the problem of your cows taking too much time to eat while they're being milked. The high producers are the worst offenders in dilly-dallying at the milking time snack.

Dairymen at Michigan State College believe they have licked that eating time problem in the college's Brown Swiss herd. Adding water to the grain mixture at milking time works well. The cows really go for the grain. They drink the feed instead of lapping it up with the tongue.

Cows eat or "drink" the wet mixture in less than half the time they formerly consumed dry feed. And they let their milk down faster. As a result they go through the milking parlor in much less time than formerly.

C. F. Huffman, N. P. Ralston and H. L. Dalton, who conducted the tests and timed the eating, say the cows eating the wet mixture seem more relaxed than others eating dry feed. As a consequence, the water-grain mixture cows let their milk down faster than those eating just dry grain.

The faster the cows eat their grain, the faster they are milked out.

The dairy researchers tried various rates of water per pound of concentrate. They found that the cows consumed the grain most rapidly when 1.5 pounds of water were added to the concentrate.

The dairymen figure that a lot of time can be saved if a practical method of adding water to the grain can be found. They're trying several ideas.

Legume Seeds Can Be Stored 3 to 4 Years—As a general rule most legume seeds can be safely held for three to four years without any appreciable reduction of germination say agronomists at the University of Nebraska. In a series of tests conducted several years ago, alfalfa seed still had a 59 per cent germination after ten years. These storage conditions were in a dry airy room.

New Beef Breeds Coming?

Cattalo, Brahmalo and

Brangus may surprise you . . .

Condensed from The Farmer

Robert G. Rupp

EVER hear of Brahmalo? Cattalo? Brangus?

They're new cattle; some coming along fast, others still in the experimental stage.

Brangus, already backed by the American Brangus Breeders Association with members scattered over half the United States, are Brahman and Aberdeen Angus crossbreds—3/8s Brahman and 5/8s Angus. They are jet-black cattle, hornless, immune to pink eye, able to sweat and to dislodge flies by twitching their muscles, much as do horses.

Cattalo are the product of a cross between domestic beef animals and buffalo. A true Cattalo, according to Canadian experimenters who have been working to increase winter-hardiness since 1915, is an offspring both of whose parents are themselves domestic and buffalo crossbreds.

Brahmalo is the name Pierre Rosander, "cowboy on foot" at Belle Fourche, S. D., has given the part buffalo-part Brahmans he is producing by crossing the former king of the prairies, the bison, with the hot-country bovine, the Brahman.

Pete Rosander got his first buffalo 12 years ago. He put them into a pasture, fed them a little protein cake to tame them, but added no extra strands to his fence to keep them from jumping over—and has had a herd ever since. Crippled by arthritis so he can't ride, he now has even the herd bull eating from his hand when he walks into the pasture.

Crossing buffalo with domestic beef animals wasn't so easy.

Like the Canadians, Pete found it almost impossible for Hereford cows to carry buffalo calves. After seven years of trying he switched to Brahmans and began breeding his buffalo

Reprinted by permission from The Farmer, St. Paul, Minnesota

bull to Brahman females. The result? Brahmalo.

First-cross heifers from Pete's buffalo - Brahman combination are being crossed again, this time in any of several directions. Some are mated to a part Highlander-part Hereford bull, some to a Brown Swiss bull, some back to buffalo.

No specific gain or weight records are available on any crossbreds, although comparisons will be made at South Dakota State College this winter.

Pete's Brahmalo are hardy. They stay out in all kinds of weather. "Only way you can get them in the barn is by chasing them in," says Pete. Hot weather doesn't seem to bother them. But heel flies do, although not as much as domestic cattle. Like the buffalo, females won't breed until they are two years old. Crossbred dams have all been fertile, heifers have had no trouble calving, and animals get fat on grass alone.

Pete will butcher "Handsome Gus," a homely four-year-old, 1,800 pound Brahman-buffalo steer this fall straight off pasture. If Gus is like the other crossbreds Pete has eaten, he'll produce tender meat and white, not yellow, fat.

P. A. Anderson, University of Minnesota meats specialist, tested a piece of Brahmalo meat for the U.S.D.A. last winter. His report to the Beltsville, Maryland, research center was that Pete's Brahmalo produce a roast that is fine for texture, juiciness and flavor, but "possibly a little 'gamey' tasting for some people."

The Canadians, working with Cattalo to develop winter-hardiness, have had considerable trouble with sterility in hybrid bulls. So far, H. F. Peters, superintendent at the Manyberries, Alberta experiment station, has been able to get only about one-fifth of the inbred cattalo bulls of 1/8th to 1/4th Bison breeding to show even partial fertility.

Cattalo produced to date have weighed approximately the same as Herefords, but have shown greater chest expansion. Herefords outdo them in the feedlot, making a third-pound greater daily gains, utilizing more efficiently and producing higher grade carcasses. But Cattalo dress out 2% higher at the packing plant.

Hereford - Bison halfbreeds show remarkable ruggedness, according to Peters. Cows up to 18 years old are still strong and "appear to have many productive years ahead of them." They continue to graze upland range on winter days when Hereford,

Angus and Shorthorn cows remain in the shelter of coulees. Peters attributes this, as well as ability to withstand flies, to their thick coat, of fine, dense hair.

Brangus, the blend of Brahman and Angus, are by far the most numerous of any newcomer cattle mentioned here.

Coming out of the Southwest, they have 20 to 25 years of government and individual experimentation behind them. The American Brangus Breeders Association, founded in Vinita, Oklahoma, by 54 breeders four years ago, now has 500 breeders from more than 26 states behind it. More than 400 registered Brangus cattle are in Canada. Southwest Texas cattlemen shipped 400 Brangus females and 20 bulls to Venezuela two months ago in that nation's largest breeding cattle importation in history.

A Brangus steer topped the recent Front Royal, Virginia, 4-H market calf sale, dressing out 60% and grading choice both on the hoof and on the hook. Another Brangus 4-H steer in Virginia dressed 64%.

Elmer Blair, Charles Mix County, South Dakota, now has, in partnership with his father and brother, 26 cows, 13 yearling heifers, six yearling bulls and 17 calves—all of them true (3/8s-5/8s) Brangus. Blair Farms also owns a herd of purebred Angus foundation females and a registered Grey Guzerat Brahman sire. Half-blood offspring from that herd, when mated to their 1/4 Brahman, 3/4 Angus bull—grandson of Master Page, a junior International champion Angus bull—produce true Brangus calves.

Blair's crossbred cows are better milkers than either Angus or Herefords, both of which are raised on their 1,500-acre ranch. Calves are more active, nursing immediately after birth. All births so far have been unassisted. Calves gain faster for Blair than other breeds, outweighing either Herefords or Angus by 50 to 100 pounds at weaning.

All are good rustlers. "Our Brangus are always the first ones out in winter. And they are still grazing when Herefords and Angus start hunting shade in the summer," says Elmer.

The Blairs have never had a case of either pink eye or cancer eye in the crossbreds, although they have had trouble each year in the other herds. Brangus aren't dangerous, but are more nervous than other cattle. Cows weigh 1,400 to 1,600 pounds when fully grown and bulls will go to 2,800.

Those three—the Cattalo, the Brahmalo and the Brangus—aren't the only new cattle popping over the horizon.

* * *

A poultry disposal pit is the answer to the problem of how to get rid of dead birds. Virginia poultry specialists say if farmers try to bury or burn each bird as it dies, the process can become too time-consuming.

* * *

Several Great Plains ranchers are seeking greater winter hardiness through Scotch Highlander-domestic cattle combinations. Superintendent Peters at Manyberries, Alberta, is experimenting with Highlanders on Herefords. One South Dakota rancher tried Angus and Bison.

Joe Erb of Ward County, North Dakota, has bred 15 to 20 Hereford cows each year to the Brahman bull he got from Florida in 1951. His crossbred calves, running with their mothers in the same lot with straight Hereford calves, have consistently outweighed the Herefords by 20%, and have done it on the same amount of feed.

Crossbred calves, by sale time each spring, average a hundred pounds heavier than straight-line calves. One female crossbred, suckling her mother, weighed 900 pounds in nine months.

AND buyers don't discount Erb's crossbreds. In fact, they sell right up with white faces in the auction ring, bringing him the same price per pound, but more money net because of the increased weight.

One trouble all who have imported Brahmans have reported is their inability to withstand cold. Peters at Manyberries writes "they are most liable to die, if left unprotected during the first cold snap in November if it gets colder than 20° below zero." Pete Rosander lost some in 1950 when the temperature went to 45° below.

Test for Fatness of Animals—A new test has been developed by the U.S.D.A. to show degree of fatness of live animals. The test employs a drug called antipyrine. A measured dose is injected into the blood stream. The fatter the animal, the greater is the concentration of the drug in blood samples. "Most useful for purebred breeders who are selecting their best young animals kept for breeding stock," says U.S.D.A. "The feeder who is finishing fat steers or hogs will have little use for the test."

$300 Per Acre From Pork

One litter a year, plenty of pasture and to market at 300 pounds . . .

Condensed from Breeder's Gazette

Irving Wallace

LAST February, William Sheriff and two sons, Bill and Don, of Goodell, Iowa, took to market 245 tons of pork from their 320-acre farm. They raised 1,650 pigs in 1952 from 235 sows—the largest single crop of pigs in Iowa, growing and fattening them on alfalfa pasture, corn and oats, and protein supplement. A pork production income of more than $300 per acre!

The Sheriffs have been gradually stepping up hog production since 1937 when they started with 300 head. They use sows of their own herd for only one pig crop.

While most farmers strive to get their pigs to the usually desired finish and weight — around 220-pound size—6 or 7 months, the Sheriffs feed about 2½ months longer and market hogs at around 300 pounds. They like the idea of a single pig crop coming on in May and June so the pigs hit the February market. This market is usually a dollar a hundredweight higher than during the peak of the marketing which is earlier.

The Sheriffs probably produce more pork per acre than any other farmer in the Cornbelt. Still they do not crowd the pigs for fast gain as many farmers do. They find they get cheaper gains by making extensive use of pasture and producing a larger hog. Over the years they have developed a system of care and feeding which requires a minimum of labor.

While one man is busy full-time during farrowing, the work required for care and feeding and hauling water after the farrowing period amounts to only 14 hours a week each, for two men.

The Sheriffs let the hogs bal-

Reprinted by permission from Breeder's Gazette, Spencer, Indiana

ance their own rations, feeding oats, tankage, soybean meal and minerals in self-feeders. Ear corn is scattered around on the ground, and loose salt is available all the time.

The large self-feeders, which hold aproximately 75 bushels, require filling only once a week. The mixture put into each feeder consists of 750 pounds of tankage, 750 pounds of soybean meal, 300 pounds of oats and 100 pounds of commercial mineral. Each batch is loaded into a dump truck and then run through a portable grinder which elevates it into the feeder. It only takes a half day to mix and grind a week's supply. The Sheriff's have to buy considerable extra feed, especially corn.

The range waterers are open steel stock tanks with float equipped fountains. Wallows for the hogs are made from 16-foot, 12-inch planks. The water is hauled in a 1,000-gallon tank. A pint of stock dip is poured on top of the water in the wallows to control infection.

A new seeding of 40 acres of alfalfa is selected each year on which to center farrowing and feeding operations. Keeping sows and pigs on clean ground has kept the Sheriff farm free from any serious problems of disease and parasites. This 40-acre tract is divided into six pens with a smaller pen in the center for sorting pigs, and for castrating and vaccinating against cholera and erysipelas.

Farrowing takes place in two of the pens. When pigs are a week to ten days old, sows and litters are moved to one of the four pasture areas.

The Sheriffs raise 140 acres of corn. When this is mature the pigs are turned into it to hog it down, converting it into pork right from the stalk and eliminating picking and storing. Small areas of the field are fenced off at a time so that the hogs do a thorough job of cleaning it up. Their hogging down system saves work in another way, too. Fields farthest from the buildings are hogged down first, the pigs gradually moving towards home so they'll be close when they go into the feedlots for winter fattening.

Much of the equipment on the farm is homemade. One piece which was designed and made on the farm is used often — a trailer with an overhead axle from which is suspended a 5x6-foot crate. The crate rides a foot above the ground but can be lowered to ground level. It is used to move sows and litters and was built when they lost so much time in getting the pigs to go up an incline. Now they have no trouble at all as the pigs do not hesitate in walk-

ing into the trailer.

The Sheriffs are taking care of another record-breaking pork crop, looking ahead to next February's market. Pork is king on this Iowa farm.

Larger Stalls and Gutters Save Time

Larger gutters, bigger stalls, and wider feed alleys are the coming thing for dairy barns. Those are the principal recommendations from several years' testing of dairy barn arrangements at Wisconsin's Electric Research farm.

Gutters at least 16 inches wide and 11 inches deep help keep a clean barn with less work, says Floyd W. Duffee, University of Wisconsin farm engineer. With an automatic barn cleaner, the center alley between gutters can be as narrow as six feet or even a little less. Some barns have stalls a little higher than the center alley. Duffee isn't recommending that practice. "It makes the cows look bigger, that's all."

What about length and width of stalls? Make them long enough for the larger cows in your herd—at least five feet 10 inches —Duffee urges. With electric cow trainers, that's not too long for smaller animals. Long stalls reduce leg and udder injuries considerably and save on bedding because the cow pushes less off into the gutter. Four-foot wide stalls give plenty of room at milking time and also allow the cow more room for legs and udder when she lies down.

A slope of about one inch from front to back of the stall is now being recommended, but with a "toe-hold" 16 inches long and an inch deep where the cow puts her front feet, so she can stand level.

Wide feed alleys and flat-bottomed mangers are time-savers when you're doing chores, Duffee says. If mangers are flat, a wide push broom can be used to sweep up left-over feed. A manger two feet wide, 10 inches high on the feed alley side, and five inches high on the stanchion side seems to be ideal for large cows.

Four-foot-wide feed alleys make it possible to use a cart for feeding. If you have a cross alley between two rows of stanchions to the center of the barn, make it at least four and a half feet wide for feed cart convenience. Because so much time and labor goes into feeding, Duffee argues that barns should be planned with ample room for feed carts and other measures to make feeding easier. *University of Wisconsin*

In the South it's spreading like a fire

COMMUNITY SELF-IMPROVEMENT

Condensed from The Progressive Farmer

Alexander Nunn and Bob Haney

COMMUNITY improvement is spreading over the South like a fire in pine timber in a a dry fall.

In some community the flame of self-improvement will flare up and begin to burn brightly. Soon, sparks of interest have landed in adjoining communities and they, too, begin to lighten up nearby areas. Unlike a forest fire, however, the improvement movement, once lighted, seldom burns itself out. The financial, social, and educational benefits keep the flames burning.

Let's take a look at what's being done in various sections of the South.

In Georgia, the agricultural extension service, the vocational teachers, and other agencies have been working with organized communities for a number of years. For the past several years, the extension service has been cooperating with chambers of commerce in "carrying on" community improvement contests.

Alabama has about 325 communities active in some kind of organized improvement and development work, according to George Sargent, extension community improvement specialist.

As an example of the well organized work being done in Alabama let's study Tallapoosa County. They use a plan of work developed by county extension workers and the extension council. The 1953 county plan of work becames a part of long-range county plans. It not only stresses the things that need doing this year but also makes detailed suggestions as to how they can be done. Close work

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with local leaders increases participation. Newspapers, radio, circular letters, bulletins, personal contacts, and talks at meetings explain the county plan.

Each community organization studies the county plan. A request is made for someone from the county agent's office to further explain the plan and answer questions at the February meeting. The community organization fits the plan to local conditions and sets up committees to work on community projects. Extension representatives work very closely with local leaders all through the year. The community organization helps the county agent to help far more people. Where before he explained new information to one man on one farm, he now has a hard-hitting, fast-moving community organization to work with. It can move quickly to take advantage of new information on a community-wide basis.

One of the first states to promote community improvement work on a big scale was Tennessee. Extension Editor A. J. Sims of the University of Tennessee says of results:

"These communities represent a tremendous effort on the part of many thousands of rural people to improve their land, their living, and the way of life their communities offer them. Working closely with their county and home agents, recruiting and training local leadership, and achieving together many things impossible for families to do alone, organized communities are literally making their neighborhoods over from the ground up."

Last year Arkansas had 187 communities in 62 counties participating in improvement work.

Community improvement tends to "snowball" interest as it goes along. As an example, let's compare figures for the past two years in the North Georgia area. It has 99 communities in 39 counties. There are 5,944 families. (See chart.)

We don't have farm equipment figures for 1951, but we do know that in 1952 these folks bought 620 trucks, 608 tractors, 380 mowers, 100 combines, 56 hay balers, 20 corn pickers, 428 tractor cultivators, 100 grain drills, 88 milking machines, and 40 milk coolers.

In addition, during the same period, they bought the following equipment for the home: 848 stoves, 572 water heaters, 1,060 refrigerators, 876 washers, 196 ironers, 1004 radios, 980 television sets.

Home and farm improvement tend to go hand in hand.

	1951	1952	Per cent Gain
People taking part in community activities	5,148	9,324	81.1
People active in Sunday school or church	11,484	14,336	24.8
Lime used (tons)	11,048	14,280	29.3
Phosphate used (tons)	4,100	5,152	25.7
Other fertilizer (tons)	31,724	55,728	76.3
Fences built (rods)	206,988	351,960	70.0
Ladino clover seeded (lbs.)	16,472	27,704	68.1
Fescue seeded (lbs.)	102.140	217,592	113.0
Crimson clover seeded (lbs.)	42,984	106,688	148.0
Dairy cattle	6,744	8,866	31.3
Beef cattle	10,324	14,648	41.9
Hogs	21,688	23,688	9.2
Chickens raised	9,015,440	11,508,884	27.7
Layers	395,356	466,536	18.0
Soil samples taken	276	2,424	778.3
Idle land reclaimed (acres)	600	4,624	670.66
Food canned (quarts)	652,708	831,696	27.3
Food frozen (lbs.)	141,588	242,724	71.4
Home-freezer units added	160	308	92.5
Homes with telephones	880	1,328	50.9

Better farm practices make more money above a subsistence level. The extra money enables a man to increase mechanization, invest more in fertilizer, better seed, and other practices to further increase production. At the same time his home is becoming increasingly comfortable and convenient. Better living and a happy family can't help but inspire a farmer to increased productivity.

Community improvement just means *better living.*

Fertilized Pastures Increase Beef Gains

Beef cattle fed on fertilized pastures gained from 33 to 100 per cent more weight this summer than cattle fed on unfertilized pastures.

In one Minnesota experiment, fertilized and unfertilized grass pastures were compared. On the fertilized pasture beef made a gain of 251 pounds per acre while on the unfertilized they gained only 119 pounds. The value per acre of beef produced on fertilized pasture was $47.16 compared with $22.33, for the unfertilized.

In still another experiment the average daily gain from beef on pasture was 1.71 pounds compared to 1.84 on grain and pasture and 1.81 on grain and dry lot. However, costs of gains with these three different feeding systems varies greatly.

How Good is All-Mash Feeding for Layers?

With new automatic feeders, it has great advantages, IF . . .

Condensed from Poultry Tribune

Dr. F. W. Hill

MECHANIZED feeding and feed handling equipment have reawakened interest in the practical use of the all-mash system of feeding hens.

Automatic feeding equipment can do its best and most efficient job with a single feed mixture, and the all-mash system has its greatest advantages when used with mechanical feeders.

Actually, using the all-mash system of hens is not a new idea. It was studied more than 20 years ago and discarded as impractical, at least for the northern section of the country, because feed consumption, egg production, and body weights were not maintained satisfactorily during winter months. Annual egg production was lower than with a feeding system based on grain and mash feeding.

This new interest in all-mash feeding is not only a result of the development of mechanical feed handling systems. Equally important are the advances in nutrition science during recent years which have made it possible to overcome the disadvantages of the all-mash rations of the 1920's and 1930's.

Research at Cornell University and at several other experiment stations to determine if all-mash rations formulated according to the new knowledge of practical nutrition would be more satisfactory has been successful.

The result of one experiment conducted not long ago at Cornell will serve to illustrate the kind of results which can be

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obtained, as well as some of the disadvantages of the all-mash feeding system.

In this work, three all-mash rations were compared. They differed primarily in the level of productive energy. The high energy ration contained only corn and wheat as the grain components. The other two rations contained lower levels of energy produced by substituting wheat by-products and pulverized oats in place of part of the corn and wheat and by more liberal use of alfalfa meal.

Satisfactory egg production was maintained with the highest energy ration throughout the period of the test, from September 1951 through August 1952. The production rate from November (when the birds hit their stride) to the end of the test averaged nearly 70 per cent. The other rations, lower in energy value, also produced satisfactory egg production rates during the late spring and summer. There was, however, a considerable difference between the rations during the winter months. The high energy ration consistently outperformed the other two in egg production.

Soon after the experiment was started, we became aware that the litter became wet and packed on the surface. We found that the hens did not work in the litter as much as hens on a mash and grain system of feeding. The litter condition was by far the worst in the pen receiving the all-mash ration which was low in energy value. This probably was due mainly to the fact that these birds were consuming more feed and water. Energy level was definitely related to litter condition. The high energy ration presented less of a problem than did the other two.

Our observations have convinced us that poultrymen need to anticipate this problem before deciding whether or not to use the all-mash feeding system. To some extent, it will be necessary to substitute manpower for chickenpower in stirring the litter. Close attention must be paid to ventilation in order to move as much moisture out of the house as possible.

The litter condition problem can be helped to some extent by moderate feeding of pellets in the litter. Our experience with this method in subsequent tests has shown it to be satisfactory, although it does not by any means eliminate the litter problem completely. If a poultryman is having litter troubles already with a conventional mash and grain system of feeding, it is likely that his problems would be increased by

shifting to the all-mash system.

While speaking of the disadvantages of all-mash feeding, it is well to mention that the feed cost will be somewhat higher with the all-mash ration than with the same ration fed in the form of mash plus grain. The added cost will be at least that charge necessary for grinding and mixing the grain into the mash.

The added cost and the litter problem must be balanced against the advantages which can be credited to the all-mash method for the particular poultry enterprise. In addition to fitting in well with a mechanical feeding system, the all-mash system has four other advantages.

1. It requires less skill on the part of the feeder than does a grain and mash system. In this latter system, some judgment is required in regulating the proportions of grain and mash intake. From this standpoint, the all-mash system would be well adapted to a commercial poultry enterprise where the responsibility for feeding may at times be given to inexperienced help.

2. Since the mash is available continuously to the hens, the all-mash method also eliminates the need for a definite daily schedule for feeding operations such as would be necessary with a grain and mash system.

3. Uniformity of egg quality can be an important advantage of the all-mash system from two standpoints: (a) a more uniform yolk color can be expected; (b) the vitamin content of the eggs probably will be more uniform, which may be important in feeding a breeder flock for both hatchability and chick quality.

4. If medication of the flock through the feed is necessary, this can best be accomplished with an all-mash feeding program.

As with any system, the poultrymen must accept the bad along with the good in deciding which system is best adapted to his enterprise. If the all-mash system is used, it will perform satisfactorily only if the ration contains a relatively high energy value.

The high energy ration also makes possible highly efficient egg production. In our tests, the differences in efficiency of production were far greater than the differences in egg production rate between the rations which were compared.

While the average annual rates of egg production of the high and low energy rations were about 70 per cent and 65 per cent, the high energy ration

produced eggs with a feed requirement of approximately 4½ pounds per dozen eggs, in contrast to more than 5½ pounds of the low-energy ration per dozen eggs.

The same efficiency can be obtained, of course, with a suitable ration on a grain and mash system of feeding, so that a high rate of efficiency is not a unique advantage of the all-mash method. The important point is that the all-mash system will be unsatisfactory if a high-energy ration is not used.

Old-Age Retirement For Farm Workers

Many aged farm laborers who held regular full-time jobs with the same employer in 1951 and 1952 may now retire and receive monthly retirement checks just like elderly people who had jobs in cities and towns. These payments will continue month after month for the rest of their lives.

The length of the time they had to work for these old-age checks depends on their age at the time they started on a job counting toward social security. At age 65 or later, they may give up their full-time farm jobs, take life a little easier, yet be sure of a regular monthly income. If they do not want to give up regular work, the payments can be made when they reach 75, even if they are still working.

As an example, Extension specialists cited 68-year-old Erick Hensen. Erick has worked on dairy farms in Wisconsin all his life. As a regular farm employee, he makes $160 a month in cash wages. Age is creeping up on him, however, and for several years now he's been thinking about easing up a little on work—not quitting work altogther, but not to keep on going full time.

A few weeks ago, Erick went to the social security office to find out what his old-age benefit payments would be if he changed to part-time farm work. Because he and his employer had been paying the social security tax for only about two years, he didn't expect to get very much. He was agreeably surprised to learn that his social security check would be $64 a month. Mrs. Hensen, who is 66 years old, would get an additional $32 a month, making a total of $96 a month in old-age payments for the two of them. In addition to his social security checks, Erick earns something from his part-time job on the farm. This does not affect his checks.

West Virginia Extension

They Were Ready When Dry Weather Came

Condensed from Kansas Farmer

Dick Mann

TWO Smith county farmers were discussing the drouth. "The trouble with us," one of them said, "is we've forgotten the things farmers in this area should never forget—the importance of feed and water reserves."

Feed and water reserves spell the difference between "hanging on" or having to sell livestock at distress prices.

There is no discounting the seriousness of dry weather the last two years over much of Kansas. Below normal rainfall and the two hottest Junes in Kansas history have taken a heavy toll. Many farmers have had no chance at all to protect themselves. But in most counties you can find a farmer here and there who, thru foresight and good planning, has found a way to offset the worst effects of dry weather. For examples, here are a few cases we found in Smith and Jewell counties, both hard hit by drouth prior to July 6, when the calls were made.

Martin Tanis and Sons, Smith county, have been irrigating from a creek on their farm since 1939. Six years ago they also constructed two large ponds at the base of two drainage areas in a pasture that adjoins the creek. For the last 5 years these two large ponds have supplied a great deal of irrigation water. But during 1952 and in the spring of 1953 there wasn't enough rain to fill the ponds.

However, there was a period last spring when there was considerable water going to waste down the creek. For two weeks, 24 hours a day, the Tanis men pumped water from the creek up to their ponds. When July came and it was time to irrigate corn the creek was too dry to supply any water, but the ponds still held a 30-day supply. The irrigation program went ahead on schedule.

Mr. Tanis started an extensive

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pond building program 7 or 8 years ago, mostly for stock water, and has this to say about it: "I've thought sometimes I was spending too much money on ponds, but it doesn't do any good to build them so small they dry up when really needed. I have 4 ponds now on which the dams will average 5,000 yards of earth. They really pay off in this kind of weather."

Depth of ponds is especially important. West of No. 81 highway, the Soil Conservation Service recommends 10 feet but most are not built that deep. Discussing this point, Fred Sykes, state conservationist, says: "In 1952 and so far in the 1953 season we have had about 9 feet of evaporation in farm ponds. Only the deepest ones still have water unless they were lucky enough to be in heavy local shower areas. We need to give more thought to deepening farm ponds."

In Jewell county we found a recently completed pond on Debey Brothers farm that just fits the bill. It is constructed with a scooped-out area so the actual pool will cover only a small area, but will be 12 to 15 feet deep. Where possible to build, this type cuts down evaporation, covers less grass.

Walter Grauerholz, Smith county, has 24 acres of sand lovegrass that proved a life-saver for his cattle in the dry grazing season of 1952, and again this summer when native grasses dried up on his farm.

The field of sand lovegrass was seeded 4 years ago in 40-inch rows with a wheat drill. It was allowed to go to seed the second year and a seed crop was harvested. The third year it was pastured, is doing well again this year.

"This particular field wouldn't grow anything before I put it to sand lovegrass," says Mr. Grauerholz, "so what I once considered wasteland is now pulling me thru on my grazing program."

He uses brome grass in spring and fall for his cattle and says sand lovegrass comes on just about the time his brome goes dormant and stays until brome comes back in fall.

Here is the amazing part of Mr. Grauerholz's experience. In 1952 he got 3 months grazing for 46 head of steers on the 24 acres of sand lovegrass. This summer, on July 6, he had 39 head of steers on the 24 acres. The secret is he held this field in reserve until June 20, so when drouth hit he was ready.

There was another angle in 1952, too. This field of sand lovegrass helped Mr. Grauerholz get his cattle on the market earlier than he could have with-

out it, thus hitting a higher market during declining cattle prices.

* * *

As a general rule the cost of housing machinery will run less than one-half the depreciation resulting from exposure to weather, according to University of Missouri.

* * *

Now, let's take a look at the farming program of George Wierenga, Jewell county. He has a 1,300-acre farm set up so 4 acres are carrying one beef animal on a year-around basis. The farm has 60 acres in sorgo for silage and there is a 200-ton supply on hand that already has been carried over 2 years. This will be built up to 400 or 500 tons at the first opportunity. Twenty acres are in rye for a 10-months pasture program for hogs, 350 acres are in brome, alfalfa and clover mixtures altho some of this is just in process of becoming established, and 870 acres are in native grass.

Livestock consists of 110 head of Hereford cows with calves, 100 yearlings held over for deferred feeding and 25 heifers raised as replacements.

In the spring of 1953 the Wierenga cattle were on brome-alfalfa pasture. Native grass was held in reserve until late June. When we called on Mr. Wierenga July 6 we found his cows were fat and sleek and in excellent milk. Grass in the native pasture was lush and the calves were doing exceptionally well. The cows were in good milk, said Mr. Wierenga, because of the brome-alfalfa pasture they got last spring.

All grain for both hogs and cattle is purchased. No wheat or corn are grown on the Wierenga farm. Everything is pointed toward meat production.

Just as he had pasture and silage reserves, Mr. Wierenga also had water reserves. We saw a pond on one quarter section of pasture that had enough water to finish this season, and to carry his cattle another full season without any additional rain. The last appreciable run-off in the pasture occurred in April, 1952. Cattle in several nearby pastures were getting water hauled from 20 miles away.

Most farmers use too much water when irrigating rather than too little, says Marvin Shearer, irrigation specialist. Citing data gathered in recent tests of moisture content in 10 counties, he explains this heavy trend to use too much irrigation water is resulting in losses of nutrients as well as extra irrigation expenses.

JUDGING LAND

Condensed from Judging Land for Soil Conservation

Harold E. Grogger
and
Albert B. Foster
Soil Conservation
Service

Third of Three Parts

Practices To Fit the Land

The fact-gathering part of a conservation program, which involves getting the strong land features and the weak land features well in mind and getting the capabilities of the land in each field well in mind, is the first step. The next step, and probably of equal importance, is selecting the treatments necessary to fit the needs of the land. Judging the land, then, may be considered as (1) taking inventory of the land on the farm; (2) designating the land use, and (3) selecting the supporting conservation practices needed. These last two are the first steps in the planning process.

Proper Land Use

The selection of the land use for each piece of land is the first and one of the most important decisions to be made in planning a conservation program.

The success of all other phases of the conservation program on the farm will depend on the judgment used in making this decision.

Selecting the proper land use

for each field is a matter of deciding whether the field is suited for cropland, for pasture land, for woodland, or for wildlife or recreation. To do this requires proper evaluation of the physical land features that have been described, and determining the land capability classification. This classification may indicate that the use of some lands may be limited to permanent vegetation. It does not indicate, however, that permanent vegetation is not desirable on land classed as cropland. The use selected for each piece of land will depend not only on the physical land conditions but on the type of farming and the desires of the farmer. Wise soil conservation planning includes selecting a use for land that it is capable of supporting.

The land capability classes have already been described but the following suggestion may help in determining the land use for a given area:

Land capability classes I to IV are considered suitable for growing farm crops and therefore suitable for different intensity of cultivation. Land conditions which have no cropland hazards, or hazards that can be overcome or compensated for by modern conservation methods, would be classified in land capability classes I, II, III or IV and can be used safely for cropland. This assumes that the practices necessary to overcome the hazards will be used. If such practices are not used, then a pasture, woodland or wildlife type of use will be necessary. Some Class IV land has such hazards or combination of hazards that the usual conservation practices cannot be applied. It is, therefore, used only occasionally for crops that require working the soil such as would be needed for re-establishing the grass and legumes.

To use any of the other classes (V, VI, VII or VIII) for cultivation is not good conservation. The very nature of the land in these classes indicates the need for protection by permanent vegetation.

A pasture, woodland or wildlife type of use is safe on all classes from I through VII. The decision as to whether the land is to be used for grass or trees may depend somewhat on the needs and desires of the farmer. Either type of use is generally favorable to the land if proper supporting and management practices are used. Some extremely stony lands or extremely steep or eroded lands

are suited to tree-type vegetation simply because only the tree-type vegetation is able to thrive under these circumstances.

Wildlife or recreation is the only type of use that, if properly managed, is safe on all classes of land. It is usually the only type of use that can be applied safely on Class VIII land.

Cropping Systems

Cropping systems, as used here, means the specific crop or plant, or sequence of crops or plants, that will be grown on the land. It includes tree or grass crops on land not suitable for cultivation as well as crop rotations on land suitable for cultivation.

If cultivation is the use selected for a piece of land, then the order or sequence of crops becomes very important.

A crop rotation is a conservation practice essential on all cultivated land. A crop rotation refers to the number and sequence of clean tilled, grain and sod or meadow crops over a period of years. For example, a row crop-small grain-meadow-meadow (R-G-M-M) rotation is a 4-year system with cultivated crops one-fourth of the time and a meadow crop one-half of the time.

In general, the more intensive the hazard or combination of hazards in a field, the greater the percentage of time the field should be in a meadow or soil conserving crop. Class II demands, normally, a less intensive cropping system than does Class I, and Class III less than Class II, etc. If the hazard is one that can be entirely overcome by some supporting conservation practice, such as contour tillage, then the same cropping system may be equally effective on two different classes of land. Meadow crops, including grass and legume mixtures in the meadow years, are recognized as soil conserving crops whether the land hazard be erosion, excess wetness, droughtiness, slope, or limited organic matter content and fertility.

Many combinations of crops in cropping systems may be used in a soil conservation program; the selection varies with land condition, type of farming, choice of farmer, seasonable weather and other similar factors. For general purposes of judging or selecting cropping systems for cultivated land all rotations can be grouped into four cropping systems:

An intensive cropping system which includes a row crop, such as corn or beans, one-half of the

time or more and a meadow crop one-half of the time, or less. An example is, a 4-year rotation of corn-corn-small grain-meadow, which can normally be safely used on Class I lands.

A moderate to intensive cropping system will include row crops from one-third to one-half of the time in the rotation and meadow or sod crops the remainder of the time. An example of this type of cropping system would be a rotation of small grain followed by three or four years of meadow before plowing again. Such a cropping system is successfully used on Class IV land.

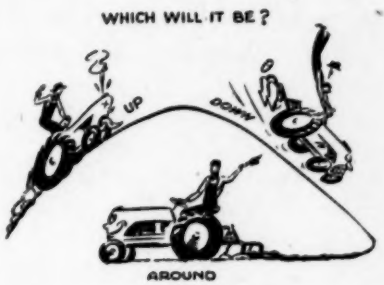
If the land use selected is of a permanent type, either grass, trees, or wildlife, then a selection of type of grass, trees or shrubs and their proper management is necessary.

Grassland, woodland or wildlife with ordinary management and no special practices can be used safely on lands of capability Class V.

Grassland, woodland or wildlife use with some special practices such as limited grazing or more than the usual care in timber cutting and wildlife protection are usually needed on land classified as Class VI.

Woodland, grassland or wildlife use with very careful management such as very limited grazing or strict regulation of cutting to overcome or compensate for the more serious hazards are advisable on Class VII land.

Wildlife or recreational use



is the most intensive system of management that should be considered for Class VIII land.

Supporting Conservation Practices

Land uses and cropping systems classified on a soil conserving and soil depleting basis should be considered only in combination with other supporting conservation practices designed to overcome or lessen special land hazards. Some such supporting practices are:

1. Contour farming with or without strip cropping.
2. The plowing under of meadow crops for green manure.
3. Terraces with adequate outlets plus contour farming.
4. Surface drainage.

5. Tillage operations parallel to field fences with no exact contouring.

6. Pasture improvement.

7. Limited or controlled grazing.

8. Lime and fertilize according to soil tests.

9. Diversion terraces with adequate outlets.

10. Timberland management.

11. Restricted cutting.

12. The provision for food, cover and water in wildlife areas.

13. Strip cropping with contour cultivation.

The basis of farm conservation planning to fit the needs of the land is selecting the proper combination of land use, crop sequence and supporting practices. This selection is a matter of judgment based on the land conditions, the nature of the hazard, the type of farming, the preference of the farmer, the economic situation and many other factors. For example, let us assume that all of the land features in a given field are favorable except that the field has a gentle slope. Such a field could be used for permanent vegetation with no supporting practices other than providing an adequate plant nutrient supply. It could likewise be used for moderate to intensive cropping provided the hazard of slope and possibility of erosion was remedied by a supporting practice such as terracing. It likewise could be used without terracing provided the cropping system included sufficient amounts of meadow crops and the field was farmed on the contour.

No exact combination of practices and crops can be selected that will fit all fields. Each field is different and must be treated according to its individual needs. For purposes of conducting these phases of a Land and Soil Conservation Judging contest, however, several possibilities are indicated on the score card and the judging technique, like livestock judging, is to compare your judgment with that of an experienced conservationist.

A score card was used in one of the first Land and Soil Conservation Judging contests held. The wording of such a score card might vary between different areas. It consists of five different parts which cover the major thinking processes needed in planning for soil conservation.

These parts are:

1. Judging the physical features of the land.

2. Indicating the land capability classification.

3. Selecting the appropriate land use for the field.

4. Suggesting the most intensive but safe cropping system.

5. Selecting other appropriate supporting conservation practices.

Some suggestions for conducting a judging activity:

1. Preparation of two or more land sites. Profile exposures should be dug at least 40 inches deep, if possible, and of sufficient length to accommodate the contestants. One side of the excavation should be perpendicular to permit a good view of the profile.

2. Surface soil and subsoil from the site should be piled separately to enable contestants to examine the soil without damaging the prepared profile.

3. The site for the profile cut should be located near the center of a uniform and representative area that can be judged as a field on which the slope, erosion and needed soil conservation practices are to be determined.

4. A separate score card should be used for each site.

5. Written reasons should be prepared by the official judges and made available to the contestants and their instructors after the contest.

Price Support Level For 1953 Corn Crop Will Be $1.60 A Bushel— The price support level for 1953-crop corn will be $1.60 a bushel, national average price, the U. S. Department of Agriculture has announced.

The support reflects 90 per cent of the October 1 parity price. It is 2 cents a bushel higher than the minimum average of $1.58 a bushel which was announced last February in advance of planting time, subject to upward adjustment if 90 per cent of the October 1 parity price should be higher. October 1 parity of $1.78 a bushel was 3 cents a bushel higher than the parity on which the minimum support of $1.58 a bushel was based last February.

The price support level for 1952-crop corn averaged $1.60 a bushel.

Under the 1953 program, loans and purchase agreements will be available to farmers from time of harvest through May 31, 1954, and will mature on July 31, 1954. Rates for individual counties are available in the State and County Production and Marketing Administration offices. *Farm, Ranch and Home News*

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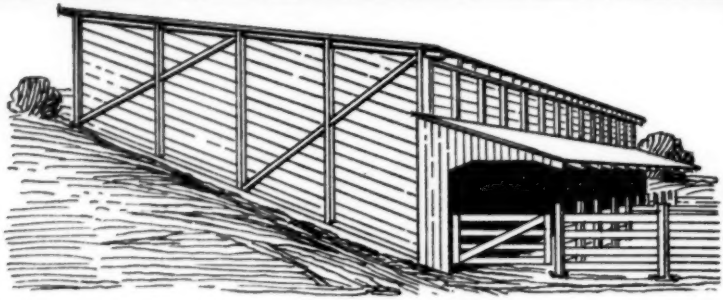

Invent Your Own Self-Feeder

With the simple discovery that gravity can feed livestock and save a great deal of hard work has come a "rash" of home-spun ideas for self-feeders. One of the most interesting is pictured above. If you have a hillside to harness, it might work for you. Bernard Dunn of California built it to feed chopped hay to his beef cattle. A simple structure, its metal-roofing covered floor slopes 37-degrees and hay slides to the manger below. Size 40 by 112-feet, it stores and feeds 450 tons of chopped hay.

In Illinois, J. M. Dowell built a 2500-bushel, self-feeding corn crib for his hogs. It cost only about $1250 including labor, materials, and a 20 by 50-foot concrete feeding floor. In appearance, it looks like most any high, narrow crib with solid ends, wire mesh sides, sloping roof and three regular size doors opening onto a feeding floor on the south side. But, inside each door is a slanting wood baffle extending into the crib from the top of the door and open about two feet at the bottom. Ear corn flows under the baffle into the doorway where hogs can get at it. The saving in labor is tremendous.